COAL AGE

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The Men in Blind Alleys

NOT all the men on whom the doors of hope have closed are confined in jails. Numbers are in blind alleys chained to one job, with the door to advancement closed, and in a state of mind about as hopeless as if they were in reality behind prison bars.

Like the men who are in jail, most of these have themselves to blame for their position, but a number are the unwilling victims of circumstances and environment.

The coal industry being as human as any other business, has its full share of these blind-alley men. Such fellows are those who have either allowed themselves by lack of spirit and will, or through the disinterest of their employers, to be sidetracked for life at one job or in one department, from which there is apparently no escape.

This is not a brief for the men who are hopelessly chained to one desk, through no fault but their own. The world is too busy and the needs now are too many to lament over idlers and slackers. But for the employees who are victims of environment they cannot alter, or for those who are condemned to work at one job until the very well springs of hope are drained dry, this is an appeal to their employers.

In all industries there are men who fill certain positions so well that by a kind of so-called judicious handling they are left there to wear out their usefulness. It is so much easier for a manager to do this than to break in a new man and give the older fellows the promotion they deserve. Or, perhaps, it is departmental jealousy, or lodge or religious affiliations that keep many men in blind alleys from which escape grows harder as the years go by.

Be fair, Mr. Employer. Look over your organization. Are there not foremen in your ranks who would have been good superintendents now if you had given them a fair chance? Would it be betraying your secret if we should say you might produce a gray-haired mine engineer, who long ago forswore his ambitions for a superintendency because he found the way blocked in some form or other? Or perhaps you remember one man who wouldn't stay in a blind alley, who went over to a more progressive concern, and since entering the other company's employ has put across many things that you would have liked to have had consummated in behalf of your own company by one of your own employees.

There will always be in business some measure of the principle that the fittest survive. The best men, like the frog in the crock of milk, are going to keep jumping until the butter of success is churned. However, it is an altogether easy matter for someone in control to keep on batting ambition on the head until it grows weary and gives up. Recently we talked to the shipping clerk for a big coal concern who has been at that one job for 21 years. He is so good at handling the orders and shipping for that company, and his work is conducted so smoothly, that they hardly know they have a shipping department. Other men have been hired from the outside to fill positions in this company that this old employee ought to have had. He knows now, when it is too late, that he must spend the rest of his life on that job—a man in a blind alley.

Good management is the art of getting the best out of men. But in all that has so far been written on the science of management, you will fail to discover that efficiency can be obtained by wearing out the bodies and souls of those that work for you.

No man wants a job over the door to which hangs a sign reading:

"ALL YE WHO ENTER HERE LEAVE AMBITION AND HOPE BEHIND."

Mr. Employer: If any of your men are in blind alleys, get busy and move them out.

Ideas and Suggestions

Price Regulation—Industrials vs. Mining

Much has been said regarding the Government price regulation of coal. In consideration of the well-known advance of all labor, materials, etc., some operators find that they cannot see a profit at present prices.

When regulating the price of coal, the Washington authorities should bear in mind that the coal-mining business is about as much like the industrial business as daylight is like darkness. Every day the mine is worked the assets decrease. In other words, the mine operator is always eating up his capital. It matters not whether his coal is leased or owned in fee. When he has mined the available supply near him his investment as regards shaft, breaker, etc., is almost entirely worthless. This means that the operator must charge himself with a very heavy depreciation.

How different it is with the industrials. Assuming that an industrial plant is operated in an efficient manner, it should increase in assets every year; the depreciation charge is practically *nil* as compared with that of the coal operator.

The industrial is not limited to the raw material immediately at its door, but can draw same from afar. In some cases, from the four corners of the earth. Have the authorities in charge of price fixing given these matters mature deliberation?

Safety Scheme To Reduce Accidents

The following is an account of a safety plan that was inaugurated by an Illinois company:

When an assistant mine foreman made the rounds of his district, he carried with him a report of the mine examiner (fireboss) who covered his section, showing all the places where loose slate or rock or other dangerous conditions existed. He also had a blank form, which he filled out as he came to these unsafe places. On his arrival at a room or heading, he would look around for the fireboss' danger mark and then investigate to discover if the miner had taken down the loose slate or rock, or had timbered the place so that it was safe to work in.

If the place was safe, the assistant foreman would pull out his watch, note the time in the blank form and state that the miner had made the place safe. The form was then sent to the main office and placed on file.

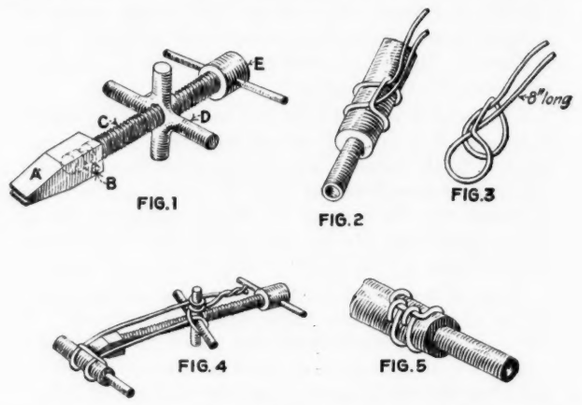
After the company put this plan into effect, many of the miners who were known to be careless would make their places safe before they would do anything else. These men were afraid the company might use the assistant's filed report as evidence against them in case of an accident.

There was not a single instance recorded of a place that was not made safe by the time the assistant made his rounds, and there were fewer accidents.

How To Clamp a Hose with Wire

A hose-clamping device which will insure a tight, serviceable joint is described by J. V. Hunter in the *American Machinist*. There are now several clamping devices on the market for drawing up a piece of wire into a tight joint in a manner similar to that illustrated in Fig. 5, but the little tool that is shown in Fig. 1 can be made in a few minutes in the shop toolroom and will serve admirably for producing a strong air-tight wire clamp that will stay in place.

Referring to the sketch of this clamping device, it will be seen to consist of but few parts. The head *A* has a groove at the end, which is really only a slight depression for catching and holding the wire. The other end of the head has been drilled out to receive the stem *C*, which is free to revolve, being held in by the pin *B*, which acts as a key in the small groove that has been turned in the stem. This stem *C* is about 6 in. long and has the solid end *E* fitted with a pin handle, so that it may be turned to tighten up the wires.



FIGS. 1 TO 5. WIRE-CLAMPING TOOL AND SOME SAMPLES OF ITS WORK

On the threaded portion of the stem runs the special nut *D*, which has four small arms forged out from it at right angles, these arms serving both as handles and for the purpose of fastening the wire during the operation of binding the hose.

In joining two broken sections of hose, use a straight nipple of pipe that will force into a snug fit. A length of 6 in. is sufficient for most cases, and it is preferable to have it free from threads, since the hose manufacturers claim that the cutting of the inside lining of the hose by the threads of a nipple damages its fabric and shortens its life. If you feel that a straight piece of pipe will not hold firmly, then on the corner of a grinding wheel grind a couple of shallow grooves at each end so that the wire will have a small depression to force the hose into, and there will be no sharp edge there to damage the hose. Grind a short taper on each end of the nipple, to remove the burr and the sharp edge.

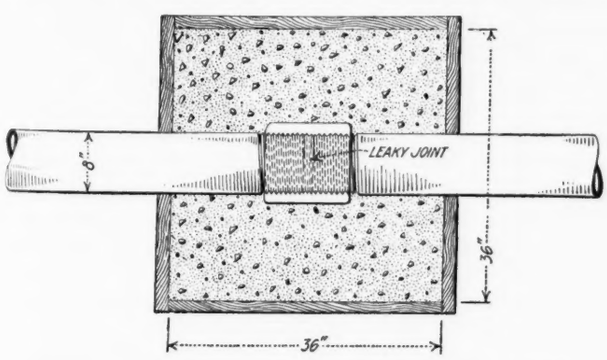
For a binding wire, a piece of No. 14 soft steel from 20 to 24 in. in length will be suitable. Bend the two ends back, in the middle, making a square-bottomed U, with the center section about ¾ in. wide. This wire can then be looped into the form shown in Fig. 3. While in this shape it can be slipped over the end of the hose, or before looping it can be threaded around the hose in any manner to suit the convenience, provided the final condition is as shown in Fig. 2.

The next step is to fit the nose groove in the end of the tool into the straight section that was prepared in the center of the wire. The two loose ends are tightly wrapped about the arms of *D*, as shown in Fig. 4, and given a final twist on the far side to prevent unwrapping. Everything is then ready for the final operation of tightening up the wire clamp. To accomplish this hold *D*, Fig. 1, with one hand, and with the other turn the handle head at *E*, which automatically pushes forward one end of the wire while drawing back on the other.

In this manner the wire can be drawn to any desired degree of tightness. One operator claimed that he could draw it so tight that he could cut the hose in two. But anyone with judgment will instinctively know when the wire is pressing firmly into the hose and discontinue the drawing up. At this point the tool is swung over in an arc of 180 deg., which turns the wires back sharply upon themselves about the bottom of the original U, and so provides an automatic lock. Then snip off the long ends of the wires with your pliers, removing the tool at the same time and bending the ends down sharply against the surface of the hose, as shown in Fig. 5. This will make the coupling smooth for handling and prevent the wire ends from catching and cutting whatever they may come in contact with.

Concreting Leaky Pipe Joints

A joint of screwed pipe of large diameter that could not be successfully tightened caused considerable annoyance and trouble. The installation was such that it could not be relieved of the pressure even for 24 hours to permit a tightening of the joint. To remedy the leakage, forms were put around the troublesome joint and filled with concrete which was well tamped to prevent air pockets or other voids. After drying, the wooden forms were removed and no further trouble was experienced. The concrete used did not contain any gravel or stones larger than ¼ in. in diameter.

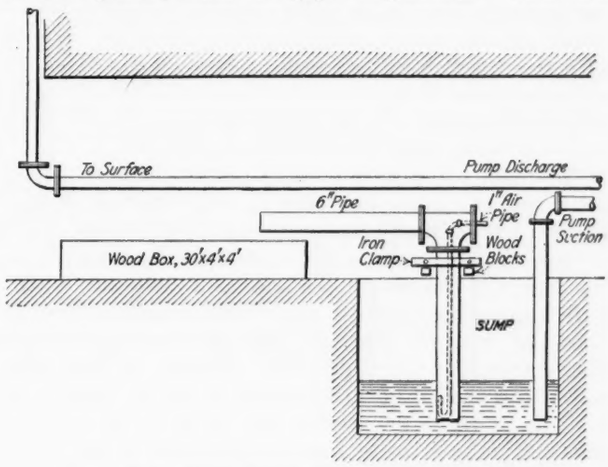


SECTION OF FORM FOR CONCRETING PIPE JOINT

Sump-Cleaning Device

The application of the principles of the air lift for draining sumps in the iron-ore mines of Michigan as described by Thomas J. Pascoe in *Power*, Sept. 13, 1917, is shown in the accompanying illustration. The equipment is made up with a 6-in. tee and a piece of 6-in. pipe that is lowered into the sump; another 6-in. pipe extends to a wood-box settling tank. The pipe that is lowered into the sump is furnished with a 1-in. air pipe which may be either on the inside or the outside of the larger pipe close to the bottom of which it extends, the lower end of the smaller pipe being bent upward. At the upper end of this smaller pipe is connected an air hose carrying air at about 70 lb. pressure.

When the sump needs cleaning, its covering is removed and two pieces of 4 x 4-in. wood are placed across it. The 6-in. suction pipe is then lowered till it is almost at the bottom of the sump. A clamp is fastened tight on the pipe close to the tee and resting on the 4 x 4-in. pieces, holds the pipe in position. With the discharge extended to the settling tank and the air hose attached, it is ready for operation.



CLEANING SUMP WITH AIR LIFT

When the air pressure is turned on, it causes the water and fines to rush up the pipe and over into the tank, where the heavy particles will settle to the bottom and the water will overflow at the top. After a few minutes the clamp is moved along on the timbers to another position to bring the suction in contact with more sludge so that it can be drawn out. A device of this kind will clean a large sump in a short time.

One Way All Can Help

Food is wasted when we eat more than our bodies need for growth and repair and to supply energy for our work. Overeating tends to poor health and fat instead of brawn, makes us sluggish and indolent instead of energetic and resourceful. Eat enough and no more. Eat for mental and physical efficiency. This is a time to demonstrate thrift in our homes. We should make saving, rather than spending, our social standard. Waste in any individual household may seem to be insignificant, but if only a single ounce of edible food, on the average, is allowed to spoil or be thrown away in each of our 20,000,000 homes, over 1,300,000 lb. of material would be wasted each day.

Care and Maintenance of Cutter Bits

By ADOLF F. FORS
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SYNOPSIS—*Sharp bits are essential to the successful operation of coal cutters. In small plants these are usually hand forged, but in medium to large plants some type of power hammer is advisable. After forging, the bits should be tempered in the manner best adapted to local conditions. They should then be systematically distributed to the machines.*

MOST mine operators who use chain coal-cutting machines have come to realize the importance of sharp bits to the successful operation of these machines. Sharp and properly shaped bits tend to decrease the load on the machine, and the saving in power alone justifies careful attention to this matter. Along with the decrease in load comes increased life of parts, and in general it is of the utmost importance to keep a coal-cutting machine supplied with sharp bits in order to insure continuous and economical operation.

The main points to be considered are: (1) Correct bit shape and method of forging; (2) method of tempering; (3) most effective method of distribution.

As to the shape of the bits, this depends largely upon the design of the chain block and upon the nature of the coal being cut. The bit should be forged so that it does not drag its way through the kerf but rather does its work at a cutting angle. There is a possibility of getting the bit forged so that it has a tendency to hang up or dig in too deeply, but, on the other hand, the tendency usually is to forge the bit too straight and this introduces the dragging action just spoken of.

Correctly Formed Bits Should Be Kept on Hand To Serve as Samples

The shape of the bit best suited to the conditions under which it works must be determined at the individual mine. When once this shape is determined, it is a good plan to have a few correctly formed bits kept in a place where they can be referred to as samples from time to time and thus prevent any gradual deviation from the bit shape which has once been determined to be the best suited to local conditions. Whether the cutting bit should be chisel- or pick-pointed or some intermediate shape must also be determined for each particular installation. If the coal breaks up freely and can be considered brittle, it is usually best to use pick-pointed bits exclusively, as then the cuttings will be coarser. Frequently, also, the load on the machine will be decreased. Where the coal is tough and woody it is often advisable to use a certain number of chisel bits interspersed among the pick bits so as to insure a kerf that does not leave projections that engage the body of the chain block or cause the setscrew heads to wear round.

At mines where only two or three cutting machines are in use, the number of bits to be sharpened does not often justify the installation of a power forge hammer. Instead, the blacksmith forges the bits by hand. This hand forging is a slow and expensive process. One of the evils of hand forging is that the blacksmith is tempted to get the bits as hot as possible in order to save hammering. This excessive heating of the bits reduces the quality of the steel and should be avoided. Although a hand-shaped bit is oftentimes more carefully finished than a machine-sharpened bit, still the disadvantages are so great that even in small operations it usually pays to install some kind of bit-forging hammer.

The forge used in heating the bit is also worthy of attention. Many operators buy good bit steel and then reduce it to poor quality before it leaves the forge, simply because they insist on using the coal they produce at the local mine. Coal with impurities should not be used, but instead crushed coke may be employed.

Difficult To Lay Down Any Hard-and-Fast Rules for Tempering Process

Tempering is more or less of an art, and it is difficult to lay down any fixed rules or prescribe any certain process and say positively that they are the best. While some blacksmiths have success with one method of tempering, others use a different way entirely. I will consequently outline a few of the most popular methods and suggest that these be tried out. Thus by experiment it may be determined which is the best suited to the local requirements.

1. Plain-Water Tempering—The bit should be heated to a cherry red and then quenched in cold water. Bits tempered in this manner are good where the cutting is comparatively hard and where impurities are occasionally encountered. Bits tempered in plain water wear a little more rapidly than those tempered in salt water, but are not as liable to break.

2. Salt-Water Tempering—When the bit has been brought to a cherry red, it should be quenched in a solution of common salt in cold water. This method renders the point hard and brittle and is very good for comparatively soft coal which is free from sulphur streak or other occasional impurities.

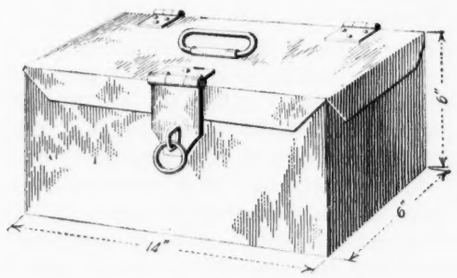
3. Oil Tempering—With the oil-tempering method, the bit is not rendered quite as hard as by either the plain- or the salt-water method, but the bit is very tough. When the steel is the usual cherry red, it should be quenched in oil. Although some blacksmiths drop the whole bit into the oil keg, it is usually a good plan to provide some sort of a rack so that only the point of the bit dips into the liquid.

4. Sand or Clay Tempering—With this method, a box containing wet clay or sand, or a mixture of the two, is used to temper the bits. After the bit has been correctly forged, it is heated to a cherry red, after which the point is stuck into the wet clay and the bit is left there. When the point is inserted in the wet clay it is chilled and hardened; then, as the heat from the bit works into the clay, the extreme hardness of the point is drawn slightly and the bit is rendered tougher and somewhat softer than with the plain-water tempering.

5. Soap-Water Tempering—A solution of cheap laundry soap in soft water gives good tempering results and is comparatively inexpensive. One cake of soap to 25 gal. of water is sufficient, and where the water is too hard to lather freely, a little washing powder should be added. When starting the tempering operation, the solution should be heated to the boiling point, after which the cherry-red bits may be thrown into the soap water. The hot bits keep the water at the proper temperature. This soap-water process insures slow cooling and an evenly tempered bit. It is usually a good plan to have a large wire basket or bucket immersed in the tub of soap water, as in such a case the bits can be easily removed from the tub when through tempering.

6. Tempering Solution—There are numerous tempering solutions on the market for which certain merits are claimed. They are mostly used in a similar way to the soap-solution method just explained.

In order to encourage the machine runner to change bits before they become dull enough to unduly load the machine, it is important to employ some regular sched-



BOX FOR STORING BITS

ule whereby the runner is sure constantly to have a sufficient supply of sharp bits. Many mines find it profitable to detail one man to be responsible for this bit distribution. A system that has been found effective is to provide each machine with four or five small iron bit boxes. These boxes can be made by the local blacksmith. The material should be $\frac{1}{8}$- or $\frac{3}{16}$-in. plate iron, and the construction of the boxes should be rugged. The box should be provided with a cover, and it has been found satisfactory to use a key-ring arrangement as a lock. Each box should be given a number that will identify it with the machine upon which the bits contained in the box are used.

At some convenient point near the shaft bottom there should be located a bit-distributing station. As soon as a box of sharp bits is received at the shaft bottom, the box should be placed in a certain compartment in this bit-distributing station. This compartment should be marked according to the machine that the bits are intended for. The motorman or triprider should visit this distributing station each trip and be sure to take whatever boxes are marked for the territory to which he is going. Other details in connection with bit distribution will have to be worked out according to local conditions, but under no circumstances is it an economical plan to distribute the bits promiscuously in open kegs.

Considerable work and great difficulty may be experienced in getting a bit-distributing system started, but after it is once going it should take care of itself and really be a money saver to the company.

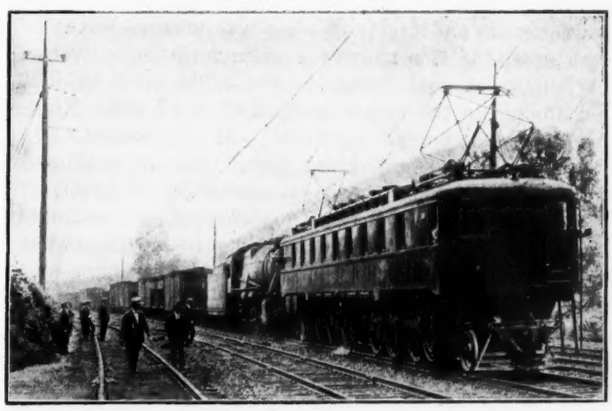
World's Most Powerful Locomotive

In the vicinity of Philadelphia the Pennsylvania Railroad Co. has been testing the world's most powerful locomotive. This machine is capable of exerting a maximum horsepower of 7000, and is intended for the mountain grade electrification between Johnstown and Altoona, Penn., around the famous horseshoe curve. During a recent test this locomotive hauled a train of 68 cars and the regular Mikado type of road locomotive. The steam locomotive, however, remained idle.

The mechanical parts of this electric engine were built by the Pennsylvania Railroad Co. at the Juniata shops at Altoona, Penn., and the electrical equipment was supplied by the East Pittsburgh works of the Westinghouse Electric and Manufacturing Company.

Enough electric current is consumed by this locomotive to light over 200,000 25-watt electric lamps, and many a town of 25,000 people has an electric light plant of smaller capacity. High voltage alternating current is used in distributing the electric power.

Exerting its maximum pulling force, this locomotive will develop 7000 hp. This machine, which weighs 250 tons and is slightly over 76 ft. in length, is the first of a type that will be used on the Altoona grade electrification of the Pennsylvania R.R., between Johnstown and Altoona. Two of these locomotives are able to haul a 6400-ton train up the mountain grade at a speed of slightly over 20 miles per hour, thus relieving, when necessary, the congestion in freight traffic over this division, which now amounts to as much as 300,000 tons



LOCOMOTIVE HAULING A FREIGHT TRAIN

per day. In addition to the heavy grade over the Allegheny Mountains a long tunnel, which helps to form the "narrow neck in the bottle" in operating over this division, must be passed through.

By electrification the expense of grade reduction has been eliminated and the capacity of the division will be more than doubled. The electrical equipment is so designed and built that these locomotives can haul heavy trains up hill and coast down hill at the same speed. By using the motors as generators in the latter case effective braking action is secured without the use of air brakes. This prevents runaways. The coasting speed can be regulated just as speed up hill or under power. Air brakes are therefore not needed while coasting, and are simply held for emergency use and for bringing the train to a full stop.

European Hydro-Electric Installations

By SYDNEY F. WALKER
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SYNOPSIS—*Britain and the continent of Europe offer many opportunities for the development of water power. Some of the plants already installed, although entailing a considerable initial expense, are able to deliver power cheaper than thermo-electric plants burning mine refuse.*

WATER has been employed as a source of power all over Europe almost from time immemorial. In my own young days flour mills were nearly all built on the banks of streams because water had been the only available source of power up till a few years before. With the development of the railway system, and the possibility of obtaining coal within reach of any line, mills and factories of all kinds removed to towns and villages that were served by railways. Since then there has been a migration of a number of industries, flour milling in particular, to seaports, because of the large quantity of sea-borne material they dealt with.

In the old days of water-driven flour mills and other industrial establishments, even the blowing cylinders for blast engines were driven by water power; the amount of power obtainable was small, and the individual mills and factories were also small. With the development of the railway system and the universal distribution of coal, factories and mills grew in size. This applies to the larger portion of the United Kingdom, over which coal is fairly well distributed. On the other hand, over a large portion of the continent of Europe, and over the greater portion of Scotland, there is little coal. France has coal only in a small corner of its area, Austria has only a little, Russia has large coal fields on its borders, but manufacturing districts there suffer in much the same manner as in America from the cost of delivering fuel.

Russian Railways Have Developed Slowly

The case in Russia is much worse than in America on account of the slow development of the railway systems, and the country's devotion principally to military necessities instead of to manufacturing convenience. Hence, all over the continent of Europe, with the rise of electrical methods of transmission, water power, "la houille blanche," as the French expressively term it, "white coal," has been brought more and more into service. A number of the cities on the continent of Europe depend entirely for light and power upon the energy of water delivered by the aid of electricity. Nearly all the railways in the mountainous districts of Europe are now operated electrically, the current being furnished by generators driven by water power.

It is in Sweden, Norway and Switzerland, and in the mountainous district surrounding the sources of the Rhine, the Rhone and the Danube, however, that the greatest examples of hydro-electric installations are to be found. In Sweden there are large deposits of iron ore that have been worked for a long time past. It is reported that the beds of ore in the southern part of Sweden are being worked out, but others further north, in the colder parts of the country, have been proved and are being developed. In Sweden, also, large manufactories of matches exist, and also of calcium carbide.

In Norway the principal use of power at the present time, I believe, is in the production of aluminum and of fertilizers by abstracting nitrogen from the atmosphere. This is accomplished by the aid of electricity. There is no coal in either Norway or Sweden, and though a certain quantity is supplied from the United Kingdom and from Germany, water power is found to be more economical, while it has the great advantage, which the present war has accentuated, of being entirely a home product.

Germany's Coal Output Is Decreasing

It is reported that the great German coal fields have turned out much smaller quantities of coal since the commencement of the war because of the enormous demand for men which the war has made. Hence if the Swedish industries had been dependent upon German coal, they would have been seriously hampered. While Britain is fairly mistress of the North Sea, the risk is still great for British ships in passing through the narrow straits between Denmark and Scandinavia.

In Switzerland and the portions of Germany, Austria and Italy bordering it a striking instance of power development is that of the canalization of the Rhine between Basel and Lake Constance. This was carried out about 20 years ago. The river has been dammed at Basel, making it navigable for vessels of 1000 tons right up to Lake Constance. The total difference between the level of the lake and the river at Basel—600 ft.—is utilized, with the result that 270,000 hp. is expected to be obtained from this 80 miles of river alone, with the assistance of the lake as a reservoir. Of this total energy 110,000 hp. is already in use or about to be started, and the remainder is in contemplation. The Falls of Schaffhausen, a few miles from the lake, have long furnished 5000 hp. to the Swiss Aluminum Company.

The development of electrical transmission of power has altered the whole industrial problem. As mentioned above, the factory or the mill formerly sought the source of power; with electrical transmission the power is brought to the mill, or factory, wherever this may be located. The continued increase of pressure that is used in transmitting energy by electricity has rendered the cost of the power delivered less and less.

So far as I am aware, no system of electrical transmission in any part of the continent of Europe has adopted such high pressures as have been used successfully in America. In the early hydro-electric installations that were put down in Sweden, American practice was closely followed, an American engineer being imported especially for the purpose.

In the United Kingdom little has been done up to the present, in the utilization of water power, even

with the aid of electricity. A few villages are lighted, and a certain amount of power is provided for factories located in them, by small hydro-electric plants a few miles away. There are two large plants in Scotland furnishing power for the works of the British Aluminum Co. The tendency of industry is to move northward in Scotland, owing to the water power available, which increases with the latitude; but this progress is slow.

No case has occurred, either in the United Kingdom or on the continent of Europe, where it has been shown to be economical to furnish the energy required for working a coal mine by the aid of water power in the neighborhood, although metallurgical mines and works have been thus operated. With modern coal-washing and screening equipment there is always a refuse that can be used under the colliery boilers, and though the efficiency of the fuel is low, requiring a larger number of boilers to be employed, it apparently pays colliery owners to use it.

I met with one case some years ago in Yorkshire, at one of the most progressive collieries in the Kingdom, where the dust from the settling tanks employed in connection with coal-washing machines was used to fire the boilers. This was used in the sodden state in which it was taken from the tanks. The engineer of the colliery told me that from careful tests he had made the evaporating value of this fuel was about 5½ lb. of water evaporated in the boiler per hour from and at 212 deg. F. per pound of the dust burned on the furnace grates.

In another colliery, in another part of the Kingdom, the boilers were fired with fine dust, not washed, that was absolutely unsalable anywhere. The manager in that case stated that they valued the fine dust at 12c. per ton, because they had to rate it at something on their books; practically it was valueless. The real cost of employing these refuse dusts is of course the interest and annual upkeep, and depreciation of the additional boilers that are required plus the labor employed in firing. Taking these, however, at their worst, it would be difficult for a hydro-electric plant to supply power at anything like the cost at which the collieries should be able to generate it.

Water Power Is Often Expensive

It should perhaps be pointed out that the idea that water power costs nothing is quite erroneous. The water may cost nothing, although not always so where there are riparian owners; but there is always the interest upon the plant and the upkeep. Bitter complaints are made, in different parts of the United Kingdom, of the large sums demanded by the riparian owners for the privilege of using the water of their rivers for power purposes. A good deal of work has always to be done in order that the power which is going to waste, say in a fall, may be utilized. At Niagara, for instance, shafts were sunk near the falls and the water led to them from the river some distance above the cataract, in canals.

There are broadly three cases where water power can be developed. The first is that where Nature has thrown a fall across a river, as she has at Niagara and in many other parts of the world; notably in Sweden, where one of the largest hydro-electric plants takes its power from the water flowing from a lake at a higher level, to one at a lower level. The arrangements for utilizing the water power in this case are different from those at Niagara, but otherwise the cases are similar.

The second and more frequent case is where one or more streams have a fairly steep fall from a high level to the plains below. A common case is where two streams join. In either case, a dam is thrown across a convenient portion of the stream, preferably closing up a gorge, and a large reservoir of water collected.

In the third case, of which a great many examples occur in America as well as in almost every part of Europe, streams of varying volume run from highlands to the sea with a gentle gradient. A dam is thrown across the stream at any convenient point (a reservoir being formed there) in the bed of the river and the fall of the stream for a considerable distance concentrated at that spot. This last is the method that was always employed for the old mill wheels. One important requirement with all hydro-electrical schemes is that there must be a large reservoir of water in some form or other.

Reservoirs Are Natural or Artificial

At Niagara the reservoir is of course in Lake Erie; in the case referred to in Sweden the reservoir is in Lake Skagen; in the case given above, on the Rhine, it is in Lake Constance. In the other cases the reservoir has to be formed, and it must be so arranged that it holds a sufficient volume of water at the most unfavorable times of the year to drive all the machinery that takes power from it.

Where an artificial reservoir is formed, careful measurements of the lowest rainfall of the district are previously taken, and the size and arrangement of the dam depend upon these figures.

With artificial reservoirs a further requirement is necessary—namely, an overflow for times of flood. This also was always provided with the old flour mill dams; weirs in almost every stream in the United Kingdom and elsewhere are familiar. Under the most favorable conditions the quantity of power taken from the power station may vary, and consequently the quantity of water flowing out of the reservoir. In addition provision must be made for excessive rains and for allowing the surplus water to run away harmlessly into the stream below the power station.

In Europe, also, and particularly in the United Kingdom, where water power is employed the promulgators of the project are nearly always obliged by Parliament to provide what is called compensation water to anyone who claims to have used the water of the stream.

The construction of the dams required for the reservoirs is often costly. In Sweden the dam that was built in the river bed between Lake Skagen and Lake Vanern was an exceedingly expensive affair. This is a case that corresponds closely to that of Lake Erie and Lake Ontario; but the power station in Sweden is not fixed at the fall into the lower lake. The river connecting the two lakes is about 8 miles long, though the lakes themselves are only a mile and a quarter apart as the crow flies. The river connecting them flows over the Gullspang Rapids, in which a fall of 67 ft. occurs in about half a mile, the remainder of the fall between the two lakes being only 10 ft. just before

the entrance to the lower lake. It was found necessary to divert the course of the river through a tunnel excavated for the purpose, while the dam was being built, and as often happens, when the bed of the river was reached a proper dam foundation was found to require a much greater expenditure than was anticipated. The bed of the river did not consist entirely of rock; and so a special construction was employed consisting of arches lying on their sides and connecting the rocky portions. This illustration is given to show how expensive hydro-electric schemes often prove to be.

An interesting case where a dam is thrown across a gorge between mountains to form a reservoir occurs

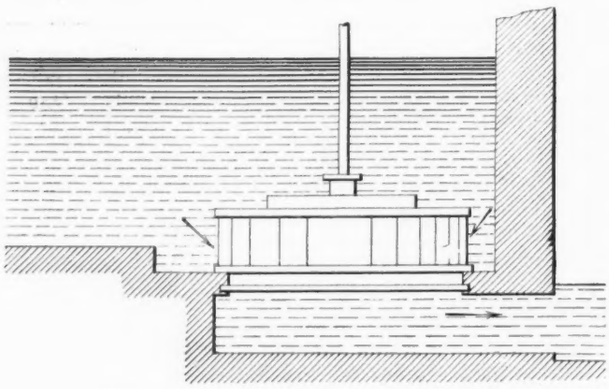


FIG. 1. TYPICAL LOW-HEAD TURBINE

in North Wales, where the water of two streams fed from two lakes at 1100 ft. above the power house and 1700 ft. above the level of the sea, is trapped by a dam 1460 ft. above sea level. A reservoir of 12 acres is formed 860 ft. above the power house, and the energy of the falling water is employed in the Croessor slate mines and adjoining works.

Another interesting case occurs at Schaffhausen, where the water that is not required during the night is pumped into a reservoir 515 ft. above the power station and is employed during the day to assist the power plant. The original plant furnishes 3800 hp. by means of two turbines utilizing the water of the river Rhone in two 15-ft. falls. The power of the plant that is not required at night is made to work two electric motors of 1200 hp. each, which are coupled to high lift centrifugal pumps and to Francis turbines. During the night the motor forces the surplus water through a pipe line 7000 ft. long into the reservoir above, and during the day the same pipe line delivers the water from the reservoir to the Francis turbines, so that about 2000 hp. additional is obtained in the daytime.

The larger portion of the turbines employed in European hydro-electric installations are either the Francis variety of the reaction or pressure type, or the Pelton impulse wheel. Both are well known in America. Occasionally a Jonval or a Girard turbine is used. The Pelton wheel is employed principally for falls above a certain height, 35 ft. being the minimum; the Francis turbine is employed for low heads and for those up to 500 feet.

The reaction turbine has a great advantage in that the water below the turbine as well as that above it takes part in furnishing the power delivered by the turbine wheel. With low heads up to 30 ft. the turbine is immersed in the water, as shown in Fig. 1, while above that head the water is brought to the turbine in an air-tight tube. A draft, or suction, tube that must also be air-tight connects the turbine with the water below.

In some cases the turbine wheel revolves in a horizontal plane, its axis being vertical; in others the turbine wheel runs in a vertical plane, its axis being horizontal. With low heads the general practice is for the axis to be vertical. Again, there may be two, three, and even four turbine wheels on the same axle, which is sometimes vertical and sometimes horizontal. A rather favorite arrangement is two turbine wheels arranged on the same axle on opposite sides of the pipe which carries water to them, while two electric generators are fixed at the outer ends of the axle.

Air Must Be Excluded

The reference made above to the suction tubes and those leading the water to the turbine being air-tight is of great importance, as is the question of the presence of air in the system generally. Wherever water is handled, air is liable to be troublesome if it is present, and it is difficult to prevent its being present. Water dissolves air, and open bodies of water, like reservoirs, absorb fairly large quantities. Water at high altitudes absorbs larger volumes of air than at lower altitudes, owing to the lower temperatures usually prevalent there, and the water which passes down the pipe line expels some of its air. Air vessels are provided to receive and discharge this air at different parts of the pipe line, and every facility is given for the air to escape.

The arrangement of the turbine varies with the quantity of water, the power required and the fall. With a high fall a smaller quantity of water will perform the same work as will a larger quantity of water with a smaller fall. The larger the quantity of water that must be handled by the turbine, no matter if it is for large or small power, the greater must be the width of the turbine and the greater the axial length. European makers of Francis turbines have divided their machines into four different series as follows:

With Series I the speed ranges up to 125 r.p.m.; with Series II it runs up to 200 r.p.m.; with Series III up to 275, and with Series IV up to 350 r.p.m. Series I machines are used for high falls and are principally of small width, while Series IV are wide axially and are used for low falls. In the Francis turbine the impulse principle is employed to a certain extent, and the wheels for high falls work more on impulse than reaction. The wheels of Series IV work more on the reaction principle than on the impulse.

The power obtained at the axle of the turbine is claimed to be as high as 88 per cent. of the power in the water, but it is wiser to estimate for only 75 per cent. Where electrical transmission is employed, there is a further loss for the conversion of the mechanical energy at the axle of the turbine, into electrical energy at the busbars. There is again a further loss for transmitting the electrical energy through the wires leading to the mill or factory where the current is employed and a third loss for converting the electrical energy back into mechanical energy in the electric motor. It is not wise to reckon upon more than 50 per cent. of the total power available in the water

as being available at the axles of the electric motors employing the current, and it is better to allow for an even smaller efficiency.

The hydro-electric plant that was put down a few years ago for the British Aluminum Co., in the historic neighborhood of Loch Leven, has some exceedingly interesting features. The installation is designed to handle 30,000 cu.ft. of water per minute with a fall of over 1000 ft. The reservoir that was built in the Blackwater River is sufficient for 90 to 100 days continuous supply for 30,000 hp. It contains 20,000 million gallons of water. The dam is a little over 3000 ft. in length and has a maximum height of about 86 ft. The top of the dam is at a level of 1068 ft., and the lowest sill of the waste water weir is 1065 ft. above sea level. The dam is constructed of concrete, in which are embedded large masses of granite, the whole being faced with fine concrete to a thickness of about 2 ft.

The water is conducted from the reservoir to the power station by a conduit for about 3½ miles and is then delivered to steel pipes. The conduit is 8 ft. wide and 8 ft. deep, and provides for a flow of 25,000 cu.ft of water per minute with a space of 9 in. above the water. This conduit is constructed partly in the rock and faced with concrete, and partly of reinforced concrete entirely, expanded metal having a diamond-shaped mesh being employed as the reinforcement.

Some Details of Penstock Arrangement

The water flows out from the reservoir into an upper penstock chamber through three 42-in. pipes passing through a screen wall in the upper part of the chamber. The delivery pipes end in bell mouths opening downward, and 4 ft. above the floor of the chamber. The upper penstock chamber provides a water cushion and settling chamber. It is fitted with scour sluices to enable the level of the water in the reservoir to be lowered at any time if required, and it also acts as a trap for any sediment that may pass from the reservoir.

In the upper penstock chamber there is fixed a gunmetal knife-edge measuring weir 32 ft. in width at a level of a little over 1000 ft. above the sea; the object being to measure the water before it enters the conduit as well as after.

The conduit has an average gradient of 1 in 1000, the curves being at 1 in 900 and 1 in 720 respectively. As the conduit passes through an area into which other streams flow, arrangements had to be made either to receive those streams or to carry them harmlessly away from the conduit. Some of the streams go to augment the water flowing to the power house, and some are carried off.

The outlet of the water at the reservoir into the upper penstock chamber is controlled by vertical valves which are worked from a valve house, a tower fixed in the reservoir, the platform from which the valves are worked standing well above the top of the water. The conduit delivers its water into the lower penstock chamber, which performs the same office for the pipe line as the upper penstock chamber does for the conduit. It has a measuring weir 52 ft. in width having a gunmetal knife-edge in its center. The lower penstock chamber is cut out of the rock to a large extent, the remainder being of concrete. At the lower end of the chamber there is a steel framework supporting panels of wire netting of ¾-in. mesh, made so as to be easily removable for cleaning.

The object of the wire netting is to trap any foreign matter that has escaped the two settling tanks formed by the two penstock chambers. From the lower penstock chamber the water is delivered to eight 39-in. main pipes and one 18-in. scouring pipe. The thickness of the pipe walls ranges from 0.39 to 0.87 in., and they are made of Siemens-Martin acid steel having a tensile strength of 25 to 29 tons per square inch and not less than 20 per cent. elongation in 8 in. The pipes were built in lengths of 19.7 ft. and were connected together by "muff" joints.

The eight pipes deliver into two bus pipes, as they are called, extending across the power house, from which the pipes leading to the turbines are taken. Half of the pipes leading from the lower penstock house deliver their water to No. 1 bus pipe and the other half to No. 2 bus pipe. Both bus pipes are attached at 30-ft. intervals to 20-in. branch pipes leading the water to the turbines. Two branch pipes, one from each bus pipe, are connected through a breeches pipe to each turbine. Fig. 2 shows the general arrangement.

Main valves in the lower penstock house control the passage of the water from the eight pipes to the bus pipes, and other valves control its passage to each individual turbine. These valves are worked by water under pressure, taken from the main supply pipes. For this purpose smaller pipes, 1¼ in. in diameter, are connected to the supply pipes and are led to the valve gearing.

Automatic throttle valves of the butterfly type are fixed immediately below the lower penstock chamber, their object being to cut off the water in case of a serious break in the pipe line itself. Water hammer in the pipe line is provided for by a purely mechanical

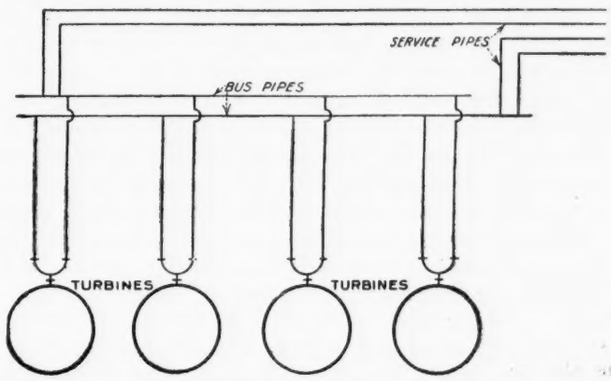


FIG. 2. ARRANGEMENT OF PIPES AND TURBINES

throttle valve worked by levers actuated by an indicator rod on the main valve.

Air valves are fixed at different parts of the pipe line to provide for the usual difficulty that arises when large bodies of water are in motion. These valves consist of iron cylinders with hollow gunmetal floats on the inside. There is a small coned hole in the top of the cylinder, the bottom of the cylinder being connected to the water line by a small branch pipe. Alternate compression and delivery of the air through the small vent hole at the top of the cylinder goes on practically in accordance with the requirements of the system. When there is a considerable quantity of

air in the cylinder, the gunmetal float is forced down, and the air escapes; the water entering the lower part of the cylinder then carries the gunmetal float up and closes the vent hole.

The turbines are of the Pelton wheel type, each having two water jets and each designed to furnish 3200 b.hp. with about 900 ft. of head at from 300 to 330 r.p.m. The efficiency guaranteed was 80 per cent. Each wheel drives two electrical generators, one on each side, the three shafts being in one line.

The generators in this case are continuous-current shunt-wound, as the energy is used close to the power station for driving the machines in the factory adjoining and for the electric furnaces used in the smelting of aluminum. The generators furnish current at 275 volts to the factory and village erected near-by.

An interesting series of efficiency tests was carried out upon the plant before it was accepted. Careful measurements were taken of the water flowing through the turbines, while the electrical generators were made to furnish current that flowed through artificial resistance so that it could be measured. A measuring weir was fixed in the tailrace, and the resistances consisted of wooden frames carrying $\frac{7}{16}$-in. galvanized iron wire stretched on them. These were immersed in the water. By measuring the flow of water by means of the weirs in the usual way, and at the same time measuring the current flowing through the resistance, a complete and satisfactory test was obtained.

An interesting point in connection with this particular water-power installation is that the cost of the current delivered, including everything, interest and upkeep of the plant, was only $\frac{1}{8}$c. per kw.-hr. It is doubtful if even the power obtained from steam engines or turbines taking steam from boilers in which the coal refuse mentioned in the earlier part of this article is employed could equal this economy. The coal, of course, costs nothing, but there is the labor of stoking and of caring for the engines and boilers generally, and also the cost of collecting and transporting the coal dust from the settling tanks to the boiler furnaces. The case of the Loch Leven installation, however, is particularly favorable to low costs because the factory is working day and night and the load factor is high.

Efficiency tests of hydraulic apparatus are easily made if the turbines are used to drive electric generators and the pressure or fall and flow of water can also be measured. Having the fall and flow of water, and the electrical pressure and current furnished by the generator, the over-all efficiency is at once obtained; and as electric generators are always now tested for efficiency before leaving the makers, a simple calculation gives the turbine efficiency. Where the power is to be applied directly to drive machinery, the test is much more difficult.

Public Coal Lands

By Chesla C. Sherlock
Des Moines, Iowa

The Supreme Court of the United States has decided that coal lands are mineral lands within the meaning of the law regulating such lands. It has repeatedly held that coal lands are subject to entry under the mining laws and that they are excluded from the preëmption and homestead claims.

Coal lands cannot be included in a townsite entry. Lands set aside for such purposes are subject to entry as other coal and mineral lands, under an act of Congress providing for such entry. In a certain case, the Supreme Court held that a state cannot select coal lands in lieu of school lands, as provided under a grant of Congress conveying school lands to the state.

Where land is suitable for agricultural development, coal and petroleum mining and other purposes, some little difficulty may arise as to which form of entry is the proper one. The proper criterion, however, is to determine first of all for which purpose it is the most valuable. It must then be entered under the form answering that purpose. If it is more valuable for coal or petroleum mining than for agricultural purposes, then it must be entered under the mining laws and not under the homestead laws.

The question is always one of fact and is to be determined in each instance by the evidence in the case. It is needless to say that where the land has been entered for agricultural purposes and another subsequently enters it for mineral purposes, that the latter must affirmatively show that the land is chiefly valuable for coal or petroleum mining before the prior homestead entry will be set aside.

In the absence of any specific law on the subject any person, whether adult, minor or alien, may lawfully enter upon and take possession of public mining lands and hold it against all persons, except of course the Government.

The Congress enacted a law in 1901 which limited the location of public mining lands to citizens of the United States or to persons who have declared their intention of becoming citizens.

So the courts have held that "an alien who has never declared his intention to become a citizen cannot hold a mining claim, either by actual possession or by location, against one who connects himself with the Government title by compliance with the mining law." It was also held in an early case that such an alien can acquire no right of location which he can convey to a citizen; and such a conveyance by an alien conveys no title.

The courts even went so far as to say that a subsequent naturalization of an alien did not retroact so as to cure this defect, and one notorious case said that where an alien located mining land by posting a notice thereon and the next day declared his intention to become a citizen of the United States, that such declaration did not comply with the law and the alien acquired no right thereby.

But the more modern rule, as announced by the authorities now, is that such a location is not void, but voidable. So, if an alien locates land and then declares his intention of becoming a citizen of the United States, he acquires full rights in a claim, unless adverse rights have intervened in the interval between such entry and such declaration.

Under this broader conception of the law, the location of such a claim by an alien can be attacked only by the Government and not by a subsequent locator whose purpose is to appropriate the claim to himself. Indeed, it cannot even be attacked by the Government in a case where the Government was a party.

Protecting Clay Ribs from Crushing

By R. DAWSON HALL

SYNOPSIS—*Where the clay is soft never load a clay face if it is being weathered. Never weather a clay face that is under load. For clay cannot endure that has both a difficulties to contend with. The article shows what happens to a clay rib, how to mend matters after the damage is done and how to forestall damage.*

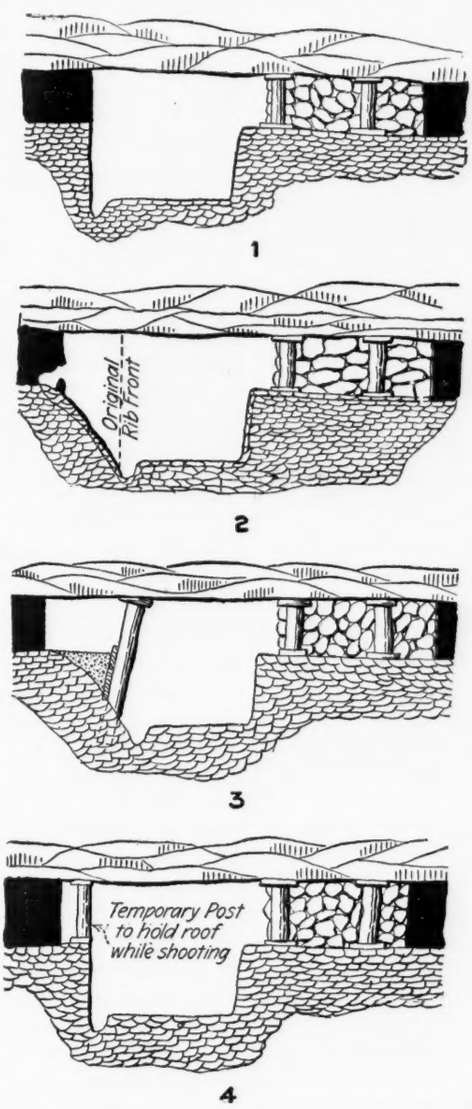
A CLAY rib is usually harder to maintain than a coal rib, though, at times it will be found siliceous enough to maintain itself without difficulty. Usually it crumbles away under the coal and so weakens the pillar. This is due to the combined action of weathering and crushing, but the clay will not weather where it it is well covered, and it will not crush so readily where it is not weathered. The problem is partly solved, therefore, by providing that weathered clay will not be subjected to crushing stresses and that the clay under pressure will not be subjected to weathering.

In Fig. 1 a somewhat usual cross-section of a gob heading is shown with the clay rib squared up on both sides of the roadway and standing flush with the coal on the left side. This is how the superintendent schemes it. Fig. 2 shows how the heading looks after some years of operation, when pressure and air currents have done their work. The clay on the left side, partly shattered by the bottom-rock shot, has weathered on the surface. The face of the clay rib has been displaced by the pressure of the face of the coal. A new face of clay has come to the front, and the face of the coal has pushed this new face off as fast as it weathered. The face of the coal rib falls off every now and again, and gradually the old vertical clay rib is replaced by a talus of disintegrated clay which continually falls and fills the ditches.

The clay on the other side is exposed on its face to weathering, but not to pressure. The clay under the pillar on the gob side is exposed to pressure, but not to weathering. As a result there is no disintegration of the clay berm anywhere on the gob side.

The tendency of corrupt foremen and superintendents is always to put relatives on the removal of the coal loosened along the rib. This coal is easily obtained. It is clear that it serves no useful purpose and only blocks the ditches. It may as well be removed before it mingles with the clay and becomes crushed and befouled so that it cannot be used.

However, because of the charges of favoritism, real or imaginary, the management often delays the salving of this coal. The removal of it, while concededly conservational, would only save the coal and some ditching expense. It would not save the situation. That can only be done by digging back a foot or so farther into the rib, thus arranging that the pressure will fall away from the clay face. This would increase the roof span and decrease the pillar support, neither of which changes is desirable unless the roof is strong and the pillars ample—a rare condition in a coal mine.



FIGS. 1 TO 4. SCENES IN THE LIFE OF A CLAY RIB

Fig. 1—Shows a gob heading as driven. Fig. 2—Shows how it looks after some five or more years of ventilation and crushing. Fig. 3—Shows what might be done to prevent further trouble, and Fig. 4—What might have been done in the first instance to make the heading permanent.

A better way is shown in Fig. 3. This plan is to cut footings in the clay and erect posts in these footings, leaning the posts a little toward the center of the roadway. Then plank could be nailed to the rearward of these posts and material filled in so as to protect the clay from further weathering. Care should be taken to put only soft material around the lower ends of the posts. Should the clay rib be squeezed later, it would not then disturb or break the timbers. However, when the heading is being driven, it may be best to cut the coal a little wider than the roadway on the rib side. When the bottom is lifted by a shot, posts resting on a plank can be set along the edge of the proposed clay face. These should be removed after the bottom is shot. The clay face, as a result, will not be subjected to pressure and so will remain vertical, thus preserving the support, saving the coal and avoiding the necessity of much ditch and track cleaning.

It is our unfortunate practice to leave considerations relative to the life of clay ribs to the future. As a result we find the solution made difficult and expensive. A little foresight and expense in preparing for their inevitable disintegration would be many times repaid in the years that follow, in reduced cost of upkeep, conservation of coal, sustention of roof and decrease in derailments.

Annual Cambria County Inter-Company First-Aid Meet

BY GEORGE B. LANDIS
Camp Educational Secretary, Camp Hancock, Augusta, Ga.

WAR recruiting, drafting of soldiers and shifting of miners to "war bride" factories has interfered with training of first-aid teams all through the bituminous region of Pennsylvania. Also this unsettled condition accounts for the failure of several teams to appear at the annual Cambria County Inter-Company First-Aid Meet held at Cresson, Penn., on Saturday, Aug. 25, on the Pennsylvania R.R. athletic grounds. Indeed, the failure of several companies to send the promised teams left a preponderance of Pennsylvania Coal and Coke Corporation teams.

Seventeen teams lined up and everything moved on like clockwork.

TEAM CONTESTS, CAMBRIA COUNTY FIRST-AID MEET, CRESSON, PENN.

Before 9:30 the one-man event was begun in the presence of a considerable crowd. The problem was: "Four fingers of left hand severely crushed, with lacerated wound of palm of hand, which is bleeding profusely. Treat and carry patient 20 ft. by shoulder lift." Three ties, score 100, resulted, which were afterward worked off on the following problem: "Man has been struck by fall of slate producing following injuries—left ear torn off, contused wound of right eye, lacerated scalp wound 4 in. long on right side of head. Treat." There was one restriction, that only the ordinary first-aid pocket packet was to be used. Harry Davis, of Hastings, won first place; John M. Sloan, of Ehrenfeld, second, and James McEwan, of Arcadia, third.

TEAMS ENTERED IN THE MEET

Company	Town	Captain	Team Average
Pennsylvania Coal and Coke Corporation	Hastings	Harry Davis	100
Pennsylvania Coal and Coke Corporation	Arcadia	James H. McEwan	100
Pennsylvania Coal and Coke Corporation	Patton	C. J. Beckwith	99⅞
Pennsylvania Coal and Coke Corporation	Patton	James Brown	99⅞
Pennsylvania Coal and Coke Corporation	Ehrenfeld	James M. Dalton	99⅛
Pennsylvania Coal and Coke Corporation	Gallitzin	H. T. Nordstrom	99⅛
Pennsylvania Coal and Coke Corporation	Patton	A. F. Fornadly	99⅛
Nant-Y-Glo Coal Mining Co	Nant-Y-Glo	J. H. Bracken	99
Cherry Tree Coal Co	Emeigh	Joe Foster	99⅞
Pennsylvania Coal and Coke Corporation	Patton	Andrew Ricko	98⅞
Pennsylvania Coal and Coke Corporation	Cresson	Dan Rennie	98⅛
Barnes & Tucker Co	Barnesboro	Wm. Birdusel	98⅛
Pennsylvania Coal and Coke Corporation	Amsbry	H. B. Woodring	97⅞
Pennsylvania Coal and Coke Corporation	Winburne	Ewelie Thomas	97⅞
Carrolltown Coal Co	St. Benedict	Geo. W. Strickler	97
Pennsylvania Coal and Coke Corporation	Nant-Y-Glo	Steve Sugarick	96⅛
Pennsylvania Coal and Coke Corporation	Bens Creek	LeRoy Scanlan	94

The two-man event was to solve this problem: "Patient found unconscious, lying on an electric wire across the abdomen. There is simple fracture of the right forearm. Rescue and treat the case. Artificial respiration should be performed for 2 min." The conditions were too easy, since there were six perfect scores. These were worked off on a more difficult problem: "A car has run over patient's left foot, cutting it off in front of ankle joint. There is severe bleeding; simple fracture right forearm and scalp wound on back of head. Treat and carry patient 30 ft. by two-hand seat." The winners were James M. Dalton and John M. Sloan, of Ehrenfeld.

Before noon the second team problem was worked as follows: "Simple fracture of right thigh. Compound fracture of left arm above elbow. Treat and carry on an improvised stretcher." After intermission the last team problem—"Man found under fall of coal with punctured wound of abdomen, broken rib, left side, cut on right side of face, bleeding in spurts. Treat case and three men carry patient for 20 ft. where passage is too narrow to permit using a stretcher"—was run off. Taking the average of all team events, it was found that there were two pairs of ties. These were run off by working this original practical problem: "A miner working in a 3-ft. seam with loose roof is caught under a fall. His injuries are lacerated scalp, badly torn left ear, compound fracture of left forearm, bad flesh wound on right shoulder and right ankle crushed. Prepare for transportation." Four doctors judged each team as to first-aid expertness and one experienced miner judged for mining practice.

The Hastings team took first place with 98 per cent., and received six aluminum dinner buckets as prizes.

The Arcadia team, with 96 per cent., was second and received six watches as prizes. Patton No. 39 was third, receiving six carbide lamps, and Patton No. 28 was fourth, getting first-aid texts and charts.

The winning teams and workers in the one-man and two-man events were given the medals of the American Red Cross, and those taking second and third places received certificates. The Hastings team, which made the highest average in all five events, received the medal of the National Safety Council. Each contestant received a fob and a pocket first-aid packet. With great enthusiasm somewhat chilled by unprecedented cold weather for August, the meet came to an end.

Pictures were taken, a hearty meal was leisurely eaten and teams were at work at 1:30. Two usual team problems were given and then the following: "Miner caught under fall of slate and coal. Height of seam 4 ft.; loose overhanging slate. Lacerated scalp wound 4 in. long. Left ear torn off; contused right eye; fractured jaw, left side; fractured right collar bone; compound fracture of right arm; left leg crushed from knee to ankle."

Both Physicians and Miners Judged Contests

The physicians judged for first-aid practice from the doctors' standpoint. Practical miners judged whether the contestants respected the 4-ft. height, whether they tested for bad roof or made any effort to make it safe and whether they removed the slate from the body or removed the body carefully from the fall. It was an interesting problem, perfectly worked by three teams who proved to be tie for first.

The tie problem improvised was: "Man has been run over by a motor and right arm cut off close to shoulder; several ribs broken on right side; compound fracture of left thigh; wound 3 in. long calf of right leg; cut on outer surface of left forearm; profuse bleeding. Treat and carry patient on an improvised stretcher." The final averages for each team resulted as follows:

		Per Cent.
1	Consolidation Coal Co., Acosta	99⅔
2	Consolidation Coal Co., Jenners No. 2	99⅔
3	Merchants Coal Co., Orenda No. 2, Boswell	99⅓
4	S. M. Hamilton & Co., Wells Creek	99⅓
5	Grazier Coal Co., Holsopple	99
6	Consolidation Coal Co., Jenners No. 1	97⅔
7	Quemahoning Creek Coal Co., Somerset	97⅓
8	Consolidation Coal Co., Meyersdale No. 1	97
9	Maple Ridge Coal Co., Holsopple	97
10	Consolidation Coal Co., No. 114, Rockwood	96⅔
11	Consolidation Coal Co., Meyersdale No. 2	95⅔
12	Brothers Valley No. 3, Macdonaldton	95⅔
13	Brothers Valley No. 2, Macdonaldton	93⅓
14	Consolidation Coal Co., No. 123 and No. 124, Boswell	91⅓
15	Consolidation Coal Co., Bell	91
16	MacGregor Coal Co., Somerset	90⅔
17	Frauenheim Coal Co., Somerset	90⅓
18	Consolidation Coal Co., Pine Hill	89
19	Somerset Mining Co., Hooversville	89⅓
20	Knickerbocker Smokeless Coal Co., Hooversville	88
21	Victor Coal Mining Co., Holsopple	87

On figuring the averages of five events the medals of the National Safety Council were presented to the Orenda team, average 99⅓, with Jenners No. 2 showing a percentage of 99⅔.

In connection with the prize giving, Mr. Landis made a few remarks concerning the progress of first aid in war and in peace, the work of the Y. M. C. A. for miners and of late for soldiers in European and Asiatic war zones, and now in the war camps in the United States with especial reference to Camp Hancock at Augusta, Georgia, to which he will return.

TREATING A PATIENT, FIRST-AID CONTEST, CAMBRIA COUNTY MEET, CRESSON, PENN.

On the Friday previous to the meet the Jenners playground of the Consolidation Coal Co. held a field and track meet at the close of the summer season. This year the playground was supervised by Miss Chessye Conwell, who had regularly visited several Somerset County mining towns last year. In addition to control of the use of the apparatus, Miss Conwell taught many new games, learned a few old country games from the foreign children, conducted story hours and promoted folk dances and round dances in an open-air pavilion.

The events of the children's meet were broad jump, 50, 75 and 100-yd. dashes, running high jump—these for boys and for girls of different ages. In a rope-skipping contest one girl skipped 187 times; a sack race was run by boys.

On the same day, the final inspection of front yards and kitchen gardens was made by Mrs. Kiernan, of the Women's Club of Somerset; Miss Margaret Jordan, Welfare Directress of the Consolidation Co., and Miss Greenawalt, the community nurse of Jenners.

The evenly mowed lawns, the beautiful well-kept flower beds, the window and porch boxes, the variety of vegetables together with the immense yield and freedom from weeds or rubbish were all taken under consideration. The money value of the crops to each family and the æsthetic influence on all residents is incalculable. Some unusual vegetables—Kohl-rabi, chicory, garlic and kale—were noticed. Bean poles 10 ft. high, with beans hanging thick on the vines or climbing over trellises, made one think of Jack's beanstalk. Dozens of children of all nationalities followed the committee from garden to garden. Furthermore, the nurse reports that of all the babies born this year in the two towns she visits not one has died; nor have any babies died in the dreaded second summer.

Mining costs of flat seams of anthracite vary with thickness. Taking coal from 6 to 7 ft. thick as a basis, the mining of thinner coal will cost more as follows: Five-foot coal 10 per cent. more; 4-ft. coal 25 per cent. more; 3-ft. coal 50 per cent. more; 2½-ft. coal 70 per cent. more and 2-ft. coal 100 per cent. more.—R. V. Norris at the International Engineering Congress, San Francisco, California.

Coal Production in Canada in 1916

CANADA'S coal production for the year 1916, according to the preliminary report of the Department of Mines, amounted to 1,194,655 tons more than in the previous year. The value showed an increase of $6,746,375. There was an increase of 5,114,701 tons in the amount imported, the value of these importations rising by $9,944,061. Exports of coal increased by 368,816 tons.

From these two groups of figures the deduction that Canada consumed a much greater quantity of coal last year than in 1915 appears evident. The increase in consumption was nearly six million tons. Consumption of coal has been increasing largely for some time, and the indications are that this year will see an even greater demand than ever before. There are a number of causes; but the most notable at present is the threatened famine in fuel oil.

So serious is the oil shortage becoming that on the western coast of Canada—the nearest Canadian district to the Californian oil fields—preparations are being made by most large users of oil to revert to coal. Already the Canadian Pacific and Grand Trunk Pacific railways are experimenting with pulverized coal, and scores of apartment houses and office buildings on the coast are preparing to change their furnaces so that coal can be burned instead of oil.

The Canadian production of coal this year does not appear likely to exceed that of 1916 to any material extent. More coal is coming from many mines, but owing to strikes the total will not be larger than in 1916.

The total production of marketable coal in Canada during the year 1916—comprising sales and shipments, colliery consumption and coal used in making coke, or otherwise used by colliery operators—was 14,461,678 short tons, valued at $38,857,557. This compares with 13,267,023 short tons, valued at $32,111,182 in 1915. There was an increase of 1,194,655 tons, or 9 per cent. in quantity, and of $6,746,375, or about 21 per cent., in value.

Western Provinces Show Increase in Production

Arbitrary values are assumed for Nova Scotia and British Columbia; namely, $3 per long ton for the former and $3.50 per long ton for the latter. In the other provinces values are as furnished by the operators. Each of the coal-producing provinces of the west shows not only an increase but also its maximum production. New Brunswick shows a slight increase, while Nova Scotia and the Yukon report decreases.

The Nova Scotia production was 6,894,728 short tons, a decrease of 568,642 tons, or 7.6 per cent., as compared with 1915. The Alberta production was 4,563,020 tons and shows an increase of 1,202,202 tons, or 35.8 per cent., over the previous year. The British Columbia production, 2,582,737 short tons, was an excess of 517,124 tons, or 25.1 per cent. Saskatchewan's production of 280,835 tons shows an increase of 40,728 tons, or about 17 per cent. New Brunswick's production was 137,058 tons, an increase of 9667 tons, or 6.7 per cent. The Yukon production is reported as 3300 tons.

Production of coal in Canada during the past two years is shown in the following table:

1915			1916		
Province	Tons	Value	Province	Tons	Value
Nova Scotia	7,463,370	$16,659,308	Nova Scotia	6,894,728	$18,468,021
Alberta	3,360,818	8,283,079	Alberta	4,563,020	11,496,106
British Columbia	2,065,613	6,455,041	British Columbia	2,582,737	8,071,053
Saskatchewan	240,107	365,246	Saskatchewan	280,935	442,136
New Brunswick	127,391	309,612	New Brunswick	137,058	367,041
Yukon	9,742	38,896	Yukon	3,300	13,200
Totals	13,267,023	$32,111,182	Totals	14,461,678	$38,857,557

The exports of coal in 1916 were 2,135,359 tons, valued at $7,099,387, as compared with exports of 1,766,543 tons in 1915, valued at $5,406,058. There was an increase of 368,816 tons, or 20.9 per cent. Total imports of coal in 1916 were 17,580,603 tons valued at $38,289,666, made up as follows: Bituminous, round and run-of-mine, 9,504,552 tons, valued at $12,368,679, or an average of $1.30 per ton; bituminous slack, 3,505,236 tons, valued at $3,704,624, or an average of $1.06 per ton, and anthracite, 4,570,815 tons, valued at $22,216,363, or an average of $4.86 per ton.

Increases in Three Kinds of Coal

There were thus increases in all three classes of coal. Bituminous, round and run-of-mine increased by 3,397,758 tons, or 55.6 per cent.; bituminous slack increased by 1,218,320 tons, or 53.3 per cent.; anthracite by 498,623 tons, or 12.2 per cent.

The total increase was 5,114,701 tons, or more than 41 per cent. in quantity. The total value shows an increase of $9,944,061, or 35.1 per cent. Details of the imports of coal during 1916 and 1915 are shown below:

IMPORTS IN 1915

	Tons	Value	Average
Bituminous, round and run-of-mine	6,106,794	$7,564,369	1.24
Bituminous slack	2,228,916	2,027,256	0.89
Anthracite coal and dust	4,071,192	18,753,980	4.61
Totals	12,465,902	$28,345,605	2.27

IMPORTS IN 1916

	Tons	Value	Average
Bituminous, round and run-of-mine	9,504,552	$12,368,679	1.30
Bituminous slack	3,505,236	3,704,624	1.06
Anthracite coal and dust	4,570,815	22,216,363	4.86
Totals	17,580,603	$38,289,666	2.18

The apparent consumption of coal during 1916 was therefore 29,884,139 tons as against 23,906,692 tons in 1915. Canadian mines contributed 41 per cent. of the domestic consumption and the balance was imported. The total Canadian production was equivalent to about 48.4 per cent. of the consumption.

Indications are that this year a larger proportion of the total amount needed in Canada will have to be supplied by imports. Last year the provinces, generally speaking, produced to their full capacity. This year labor conditions are somewhat worse, strikes have delayed production in many mines and the total is very unlikely to exceed that of 1916. Any increase in the consumption of coal in Canada this year must, apparently, be made up by the United States mines.

The total coke output of the Dominion last year was 1,148,782 short tons, made from 2,134,911 tons of coal of which 1,501,835 tons were of domestic origin and 633,076 were imported. Here again the demand for imports is likely to rise.

Mining activity, particularly in British Columbia, has been more marked than ever before, and the consumption of coke in the smelters is naturally increasing.

The total coke used or sold by the producers last year was 1,469,741 tons, valued at $6,045,412, or an average of $4.19 per ton. In 1915 the output was 1,200,766 tons and the quantity sold or used by the producers was 1,170,473 tons, valued at $4,258,580, or an average of $3.64.

Returns in 1916 show a recovery of 67.9 per cent. of the total coal charged, as compared with 64.7 per cent. in 1915. By provinces the output was:

	Output in 1916, Tons	Increase Over 1915, Tons
Nova Scotia	653,836	68,843
Ontario	452,502	136,291
Alberta	45,548	18,361
British Columbia	299,896	24,521

Byproducts from coke ovens included 11,040 tons of sulphate of ammonia; 9,012,202 gal. of tar; 5,058,636 thousand cubic feet of gas. These were in excess of the previous year's production. Benzol, toluol, naphtha and naphthalene were also produced last year. The ovens operated were those at Sydney and Sydney Mines, N. S. W.; Sault Ste. Marie, Ont.; Coleman, Alta., and Fernie, Michel and Union Bay in British Columbia. All the others were idle throughout the year.

At the close of 1916 there were 1907 ovens in operation. The imports of coke in 1916, the highest recorded, were 757,116 tons, valued at $3,229,078, while the exports were 48,539 tons valued at $221,334.

What Pulverized Coal Means to Brazil

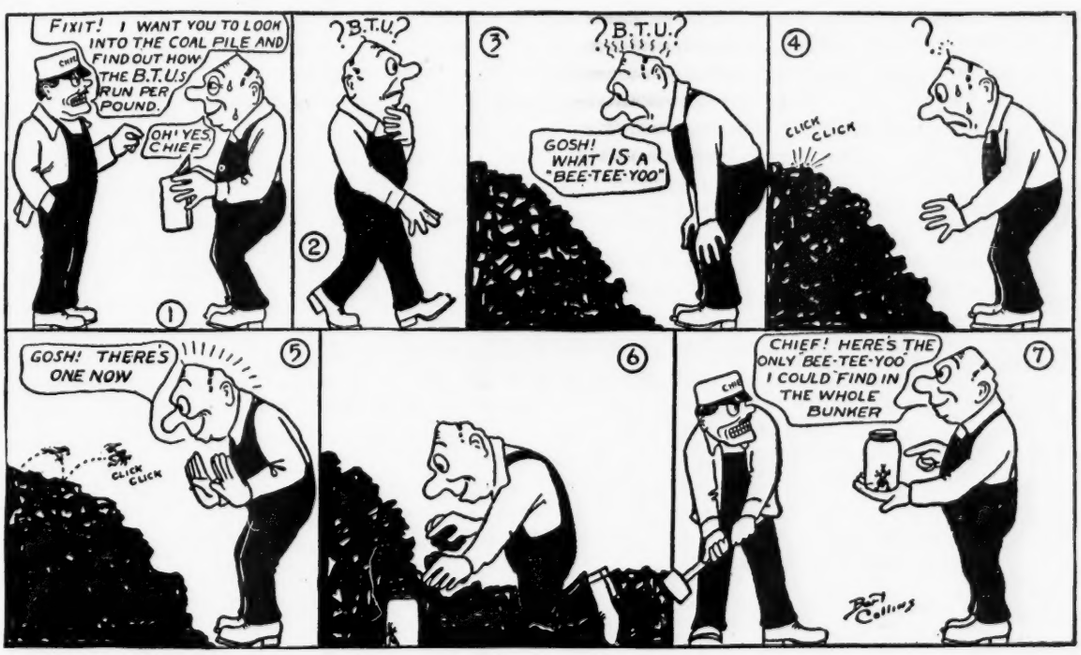
As much as the railroads and industries in this country are suffering from the present fuel situation, the problem is insignificant when compared with that of Brazil, says the *Railway Age Gazette* in a recent issue. With about 500,000 square miles of territory containing deposits of coal which can be easily mined and transported to the industrial centers, Brazil has been forced to import this material from Europe and America because up to the present time it has been found impossible to burn the domestic coal successfully. In 1915 there was imported 1,346,147 metric tons, 561,150 of which came from America. The price of this coal has more than doubled on account of the war, the average price now paid being about $40 per ton. Even at this high rate Brazil has been unable to obtain more than 75 per cent. of its requirements.

The difficulties encountered with the use of Brazilian coal are due to the large amount of iron pyrite contained in it, which combined with the ash forms such a large amount of clinker that efficient combustion on ordinary grates is impossible. The analysis of the coal is as follows:

Moisture	from 2 to 8 per cent.
Sulphur	from 3 to 9 per cent.
Volatile	from 14 to 28 per cent.
Fixed carbon	from 34 to 58 per cent.
Ash	from 26 to 30 per cent.

The relatively high volatile and carbon content make it very desirable for fuel if it can be burned successfully.

The Brazilian fuel situation is of national importance and has a direct bearing on the political situation. Several extensive and expensive investigations have been made to find a means for successfully using this fuel, but until 1915 the problem remained unsolved. At that time tests made by the Locomotive Pulverized Fuel Co., of New York, with pulverized coal on locomotives, was called to the attention of the government by the director of the Central Railway of Brazil, Dr. Miguel Arrojado Lisboa. This method of burning fuel not having previously been considered in connection with the Brazilian coal, Dr. Joaquim de Assis Ribeiro, chief of traction of the Central Railway of Brazil, was sent to



ENGINEER FIXIT: THE CHIEF IS GOING TO BUY COAL ON B. T. U. BASIS
Reproduced from "National Engineer."

this country to make an investigation. The possibilities of this method were so apparent that 50 tons of Brazilian coal was shipped to this country for tests on the pulverized fuel burning locomotives. These tests proved so satisfactory that in May, 1916, Dr. J. J. da Silva Freire, sub-director and locomotive superintendent of the Central Railway of Brazil, came to this country for further investigation, paying particular attention to the use of pulverized fuel in both locomotives and stationary boilers.

As a result of the second investigation the Central Railway of Brazil decided to install a pulverized fuel preparing plant, having a capacity of 15 tons per hour, to be used for steam locomotives and stationary boiler equipment at shops located at Barra do Pirahy, which is about 65 miles north of Rio de Janeiro. At the same time an order was placed for twelve 10-wheel passenger locomotives to be equipped with pulverized fuel burning apparatus. These locomotives were built by the American Locomotive Company.

The first locomotive fired with pulverized fuel was put into service Aug. 27, 1917, and the rest of the locomotives were put into commission at the rate of one a day thereafter. On Sept. 9 the first successful run was made with the pulverized coal. This run was made with considerable ceremony, the president of the republic riding the locomotive throughout the trip.

With the successful use of native coal, Brazil has solved one of its most perplexing economic problems. The Brazilian government has contracted to equip 250 of the locomotives on the Central of Brazil with the pulverized fuel burning equipment during the next five years. This contract also includes the equipping of stationary boilers and industrial furnaces.

The 12 locomotives which were built in this country and sent to Brazil equipped to burn powdered fuel weigh 172,000 lb. and have a maximum tractive effort of 28,300 lb. They have a gage of 5 ft. 3 in., cylinders 21½ x 28 in., driving wheels 68 in. and weigh 122,000 lb. on drivers. They are equipped with firebrick arches and superheaters, have a total heating surface of 2149.7 sq.ft. and a superheater heating surface of 428.2 sq.ft.

Mining Engineers Meet in Middle West—III

Records the Latter Part of the Trip of the American Institute of Mining Engineers in the Lead and Zinc, Oil and Gas Regions

BY R. DAWSON HALL

IN THE previous issues an account has been given of the technical session at the Planters Hotel, St. Louis, Mo., and of the trips to the byproduct works and the coal shafts at Nokomis, Ill.

The metal-mine engineers spent the morning of Oct. 9 at the plants of the National Enameling and Stamping Co., the Commonwealth Steel Co., the American Steel Foundries, Wagner Electric Co., Curtis Manufacturing Co., and the American Zinc, Lead and Smelting Co. In the afternoon there were some sessions of the sections on ore deposits and iron and steel, a trip to the Diesel Engine Co.'s plant and a reception at the residence of President and Mrs. Moore. In these functions the coal men could not take any part, as their Nokomis trip consumed too much time.

On the return from this trip the visitors took a special train to Webb City, Mo., a journey, which with a stop at Mulberry, Kan., occupied the whole night and the greater part of the following morning. At the latter place the shovel of the Mulberry Coal Co. was removing 25 ft. of comparatively soft dirt to secure a seam of coal about 2½ ft. thick. This seam had quite a number of horsebacks running through it. The coal, after being shot, was loaded by men into coal cars, the impurities in the coal, as is usually the case in Kansas, making the use of the customary coal-loading shovel undesirable.

Most of the visitors kept out of the strip pit, lining themselves along a berm of material cast up to keep water out of the pit. The country surrounding the stripping is often entirely under water, and the berm necessary to protect the pit is about 10 or 15 ft. high, a large earthwork for a small shovel to handle, but a mere bagatelle to the mammoth Kansas shovels.

Some of the coal men left the train at Pittsburg, Kan., and visited shovels at various points in the same neighborhood. In one place horsebacks were so numerous that it had not appeared profitable to cut the loading tracks through them. To avoid this expense at this pit the coal cars were spotted in the pit by derricks on the surface of the ground and when filled were lifted onto tracks on the edge of the pit.

At Webb City automobiles were provided to take the visitors to the mills in the neighborhood, many persons going to Oronogo (ore or no go) where it was quite evident that "Ore" and not "no go" was the answer to the problem. The Webb City and Carterville field forms the celebrated "sheet-ground" lead and zinc district, so termed because the deposits instead of occurring in veins or cavities throughout the country rock are found in regular blanket deposits where the impregnated waters have passed in sheets through the cherty material. In places, however, near Oronogo before the Pennsylvania measures were deposited caves were eaten in the Mississippi measures, including the Great Falls chert. These caves fell in and were filled with material correlated with the Pennsylvania or coal measures. Where there was a contact between these Mississippian and Pennsylvania measures, the waters had deposited rich deposits of sphalerite and galena.

At noon the crowd had assembled at the American Davey mine of the American Zinc, Lead and Smelting Co. There they lunched in a body in an annex of the change house of the company and later descended by fours in the ore bucket or "can" like the 400 men who work there by day and the 300 men who are on the night shift.

Such a roof no coal man ever saw. There were stretches of almost 200 ft. wide without a prop, the roof

being sound as a bell. The workings are wholly in Great Falls chert, a brecciated and recemented highly siliceous limestone of great strength. In this mine there was a regular blacksmith shop with pneumatic hammers and oil furnaces to heat the drills.

Automobiles took the visitors to Joplin, Mo., and to more meetings and, of course, to a banquet and more patriotic speeches. The Connor hotel, where the entertainment was furnished, had a reproduction of a "Forty-niner bar" with a sheriff with chaps and bartenders in red shirts and on the walls illustrated notices of "men wanted" for all the crimes on the calendar. Confidentially, of course, among the persons advertised for were President Moore and other leading institute men.

The floor was covered with sawdust, while candles in bottles lighted the scene. Every now and again a desperado would enter with a dynamite cartridge duly primed and provided with a long fuse. This he would throw among the visitors. The delayed explosion though loud was quite harmless, as was also a pistol duel which took place while the banquet was going on.

In One of the Newest of Mining Regions

That night was spent by the visitors in the cars which early in the morning moved on to Blue Mound near Picher on the Kansas-Oklahoma line. A large tent had been erected and there the local entertainment committee served breakfast. That being ended, the visitors from the cap of red conglomerate rock, known as the Blue Mound from its appearance in the distance, viewed all the perfectly level but more eroded country round about with its myriad of white tailing piles like sugar-loaf hills each crowned with a lead-and-zinc mill—a truly wonderful sight. They also watched an Indian Dance, certain camera-shy members of the civilized tribes in gorgeous raiment of needlework having been bribed to perform for their amusement.

Automobiles took the visitors in scattered parties to the various mills and mines, and many of them took to the "can" again and descended into the workings. At noon a lunch or rather a banquet was faultlessly served by the ladies of the Christian Church, Miami, in the basement of their new edifice. As Mr. Seed, Miami's spellbinder, promised, all those who were present in this Miami trip never forget it; they will "be just arar-in' to get back."

However, with Miami badges as big as Hallowe'en pumpkins attached to their lapels the guests left for Tulsa, arriving 196 strong, only six less than left St. Louis. There the wonderful Cosden Oil Refinery was inspected, a model plant as cleanly as a biscuit factory. There was shown the manufacture of the paraffin wax that is used by miners in their lamps. The process of straining out the oil and cleaning the wax would in itself form a most interesting story.

A banquet in the evening with 768 persons present and a patriotic speech of more than ordinary force from the eloquent Senator Owen completed the day's proceedings. Early on the morning following a special train was provided to take everybody to Oilton and there the children thronged the station to greet the visitors with their "college yell." Automobiles lined the village street from end to end.

The trip to Drumright and Shamrock took the visitors through the great oil field, where they saw not only the wells but at least two types of casing-head gasoline plants—one where the gasoline was segregated from wet gas by cooling and compression and one where it was absorbed from relatively dry gas by absorption of white-seal oil and where it was later distilled and condensed for shipment to market.

At Drumright a delightful buffet lunch was served. Shamrock practically marked the end of the trip. From that point a tired, dusty and overfed crowd traveled back to Tulsa, St. Louis and New York. It was a great trip, full of instruction and pleasure, and it reflects great credit on President Moore and his many energetic and generous-hearted collaborators.

Firedamp in Gold Mines

Word has come recently, from a correspondent in western Australia, regarding the alleged occurrence of firedamp in one or more of the gold mines in that vicinity, and I thought that the information would be of interest to the readers of *Coal Age*.

Some months ago a slight explosion occurred in the Great Boulder mine. It was, at the time, attributed to the ignition of a small body of gas that was believed to have accumulated in a cavity of the roof. As this was an unheard-of experience in the mines of that district, the occurrence caused considerable comment, and an inquiry was started, later, to ascertain the nature of the gas that it was claimed had caused the trouble.

The inquiry was conducted by the officers of the Mines Department, but they were unable to arrive at any definite conclusion, though inclined to the belief that the gas was light carbureted hydrogen or methane, which is rarely to be found in appreciable quantities, in gold mines, but is very commonly associated with the coal formations.

This conclusion was later partly confirmed when a similar gas was reported to have been found in the Ivanhoe mines in the graphitic formation. In the explosion that occurred in the Great Boulder mine one man was rather severely burned when his candle came in contact with the accumulated gas.

The occurrence of gas of this nature is, however, regarded of slight importance, in gold mining, owing to the gas being generated in such small amounts that it is seldom to be found accumulated in quantity sufficient to be considered dangerous. But, in order to avoid all possibility of a repetition of such an accident as occurred at the Great Boulder mine, all places in the graphitic formation where it is possible for gas to accumulate must, now, be first tested with a candle held at the end of a stick.

This form of testing for gas is a positive one and reminds us of the old days when a donkey having a lighted candle fastened on his head was driven ahead by the fireman when exploring a coal-mine level, before men were permitted to enter for work.

Speaking of the occurrence of firedamp in metal mines, I recall that in one lead mine, in Derbyshire, England, firedamp was given off so freely, in one portion of the mine, that the miners were obliged to use safety lamps the same as in a coal mine. That gas came from the Yoredale shales.

Barrier Pillars in the Coal Mines of Pennsylvania

By Frank Hall
Deputy Chief, Department of Mines, Harrisburg, Penn.

The question of barrier pillars, which form the protecting walls between mines, is an important one, since the failure to maintain pillars that are sufficiently strong may result in an unexpected flooding of the mine workings by water from an adjoining operation and result in the most disastrous consequences. This danger is to be apprehended chiefly from the near approach of live workings to abandoned mines in which large bodies of water accumulate at times. If the barrier pillar separating the new and old workings is inadequate, the former, if in operation, may suffer severe material damage and the lives of the men employed therein may be imperiled.

As certain mines in the State of Pennsylvania have recently been reported to the Department of Mines as approaching a menacing condition in this respect, the department has thought it proper to call the attention of the mine inspectors to the necessity of taking every possible precaution to guard against dangers of this kind. Each inspector has been requested to report to the department, at his earliest convenience, every company that neglects to carry out the requirements of the law.

The Chief of the Department of Mines has warned inspectors that both they and the operating companies have a duty to perform in this matter, and he notified the inspectors that they will be held responsible for any neglect in carrying out the instructions of the department. On this point, the Pennsylvania mine law is very explicit. Article 2 of the bituminous act of 1911 reads as follows:

Sec. 2. When the workings of a mine are within 300 ft. of the boundary lines between such mine and any adjoining mine or mines, application shall be made by the operator or the superintendent to the inspector for information as to the proximity of the workings of such adjoining mine or mines, and if the workings of such adjoining mine or mines are, at their nearest point, within 300 ft. of such boundary line, the inspector shall so notify the said operator or the said superintendent, who shall have such portion of the workings of said adjoining mine or mines surveyed and shown on the map of the mine first mentioned. For the purpose of making only the survey herein required, the engineer or surveyor of any mine shall have the right of entry into any adjoining mine, on the written authority of the inspector.

Then, after specifying certain requirements in respect to the mine map and authorizing and directing by the mine inspector that the necessary surveys be made to show the proximity of adjoining workings, the law continues:

Sec. 4. . . . And whenever any of the workings or excavations of any mine shall be driven to their destination, it shall be the duty of the operator or the superintendent to cause the mining engineer or surveyor to check up all his previous work and notes of said mine, so that he can certify that the said map shows correctly all the excavations made therein, as he is required to do by Sec. 6 of this article.

Sec. 5 requires the operator or superintendent of every mine to furnish the mine inspector of the district a true copy or blueprint of the mine map extended to date, each six months. Then follows Sec. 6, which reads in part as follows:

Sec. 6. Whenever a mine is worked out or abandoned, the operator or the superintendent shall, within 60 days thereafter, extend the inspector's map to show clearly all the worked-out or abandoned territory, with all property and boundary lines and elevations, as required in Sec. 1 of this article.

Sec. 5 of Art. 3 forbids the mining of coal within 50 ft. of any abandoned mine containing a dangerous accumulation of water, and provides further as follows:

Provided, that the thickness of the barrier pillars shall be greater and shall be in proportion of 1 ft. of pillar thickness to each 1¼ ft. of water-head, if in the judgment of the engineer of the property and that of the district inspector it is necessary for the safety of the persons working in the mine.

Referring to the same subject, the Pennsylvania Anthracite Mine Law, Art. 3, Sec. 10, reads as follows:

It shall be obligatory on the owners of adjoining coal properties to leave, or cause to be left, a pillar of coal in each seam or vein of coal worked by them, along the line of adjoining property, of such width, that taken in connection with the pillar to be left by the adjoining property owner, will be a sufficient barrier for the safety of the employees of either mine in case the other should be abandoned and allowed to fill with water; such width of pillar to be determined by the engineers of the adjoining property owners together with the inspector of the district in which the mine is situated, and the surveys of the face of the workings along such pillar shall be made in duplicate and must practically agree. A copy of such duplicate surveys, certified to, must be filed with the owners of the adjoining properties and with the inspector of the district in which the mine or property is situated.

It is to be hoped, and I believe it true, that the attention given this important matter by the Department of mines and the publicity extended through the columns of *Coal Age* will be the means of averting serious accidents from the inundation of mines operating under dangerous conditions.

Illinois Mining Institute Meeting

The fall meeting of the Illinois Mining Institute will be held Saturday, Nov. 17, at the City Hall, Springfield, Illinois.

The morning session, starting at 10 o'clock, will open with an address of welcome by Mayor Charles T. Baumann, with response by Fred S. Pfahler, president of the Institute. A paper entitled "Right and Wrong Methods of Shooting Coal," by Thomas C. Wright, will then be read, followed by discussion and lunch.

Election of officers will be held at 2 p.m., after which a paper on "Will Opening New Mines Be Beneficial to the Coal Industry of Illinois?" will be read by Frank F. Tirre, followed by discussion. A business session will end the meeting. The banquet at 7:45 p.m. will be held at the St. Nicholas Hotel.

COMING MEETINGS

Illinois Mining Institute will hold its fall meeting Nov. 17, at Springfield, Ill. Secretary, Martin Bolt, Springfield, Illinois.

American Society of Mechanical Engineers will hold its annual meeting Dec. 4 to 7 at the Engineering Societies Building, New York City. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Coal Mining Institute of America will hold its annual meeting, Dec. 5 and 6, at Pittsburgh, Penn. Secretary, H. D. Mason, Jr., 541 Fourth Ave., Pittsburgh, Pennsylvania.

Kentucky Mining Institute will hold its winter meeting, Dec. 14 and 15, at the Seelbach Hotel, Louisville, Ky. Secretary, Charles W. Strickland, Sturgis, Kentuckv.

Northwest To Receive More Coal

To insure a sufficient supply of coal for a portion of the Northwest, priority order No. 3 was issued Nov. 2 by Robert S. Lovett, the administrative officer in charge of priority. Stripped of its purely formal paragraphs, the order reads:

First—That the railroad companies named in subdivision "Third" below, serving the coal mines in the Utah and Wyoming coal fields, shall, until further order, supply daily to the mines in the Utah and Wyoming coal fields all or so many of the empty box and single deck stock cars moving West or Northwest over their lines as may be required to transport coal ready for shipment West or Northwest, according to the direction in which such cars are being moved.

Second—That the railroad companies named in Subdivision "Third" below shall so transport or deliver all cars of every kind loaded with commercial coal and destined to points West and Northwest of point of shipment, that they shall have preference and priority in shipment, after transporting (a) railroad fuel supply, (b) live stock and perishable freight, including sugar beets, (c) Government shipments and (d) commodities to and from smelting plants sufficient to keep same in operation.

Third—The railroad companies to which this order applies are: Denver & Rio Grande R.R. Co., Los Angeles & Salt Lake R.R. Co., Utah Ry. Co., Union Pacific R.R. Co., Oregon Short Line R.R. Co., Southern Pacific Co., Western Pacific Company.

Production Up To Last Year's Level

After having dropped decidedly below the level of last year's production, an increase was effected in the amount of coal mined during the week ended Oct. 27, bringing production up to the level of last year. The total production of bituminous coal during the week ended Oct. 27 is estimated by the Geological Survey as having been 10,665,956 net tons. The increase over the preceding week was due almost entirely to the return to work of the striking miners in Illinois. The extent that the various strikes affected production is shown by the Geological Survey's figures for the week ended Oct. 20, when the bituminous mines of the United States were operated only at 60.6 per cent. of full-time capacity.

There was an increase in the production of beehive coke. During the week ended Oct. 27, the total beehive coke produced was 639,216 net tons, according to the Survey's figures, as compared with 624,013 net tons.

Shipments of anthracite during the week ended Oct. 27 were 42,338 cars. The number of cars shipped is slightly less than those forwarded the week previous, but the shipments of anthracite for the past five weeks have been substantially in the same volume.

Peabody Now with Bureau of Mines

Francis S. Peabody, chairman of the Coal Production Committee, has been appointed by Secretary Lane as assistant to the director of the Bureau of Mines in charge of explosives, under a recent act passed by Congress. The act is designed to prohibit the manufacture, distribution, storage, use and possession in time of war of explosives, and provides regulations for the enforcement of these provisions. In addition to his new position, Mr. Peabody will still retain the chairmanship of the Coal Production Committee.

Coke Now Receiving Attention

Recognizing the seriousness of the coke situation, much of the attention of the Fuel Administration during the past week has been concentrated on that problem. The result was the appointment of Warren S. Blauvelt, of Detroit, to act as the representative of the coke industry on the staff of the Fuel Administration. There is no denying that had the matter been left to the coke operators, others would have been chosen before Mr. Blauvelt.

The coke operators now in Washington state, however, that they have confidence in Mr. Blauvelt's ability and will offer no complaint as a result of his appointment. The beehive operators are somewhat concerned for fear that Mr. Blauvelt has not a comprehensive understanding of their problem, since his experience has been largely in connection with the byproduct industry. Mr. Blauvelt is now connected with the Steere Engineering Co., of Detroit. He formerly was engineer for the Semet Solvay Co. R. H. Knode, of the National Fuel Co., of Pittsburgh, is assistant in handling of coke problems for the Fuel Administration.

Coal Men To Be Investigated

An immediate investigation of charges that coal operators and dealers are not carrying out the orders of the Fuel Administration fixing prices and Government distribution will be started by the Department of Justice.

Orders have been prepared directing all Federal district attorneys to study the Fuel Administration's regulations and to see that they are enforced. The directions will call for a careful sifting of charges and for prosecutions wherever it appears that the law has been violated.

Rules of Tidewater Coal Exchange Govern Shipments of Soft Coal

All shipment of bituminous coal to Tidewater in the future must conform to the rules of the Tidewater Coal Exchange. The Fuel Administration, after a careful examination of the operation of the exchange, has made this ruling. Shippers will not be required to join the exchange, but nonmembers will be subjected to the same restrictions and will enjoy the same advantages as members. Rembrandt Peale will be continued as commissioner of the Tidewater Exchange and in addition has been made the Fuel Administrator's agent in charge of Tidewater shipments.

Prices Increased in Ohio Fields

Coal prices in the Palmyra, Massillon and Jackson fields of Ohio were increased by the fuel administration as follows: Run-of-mine from $2.35 to $3.75, on prepared sizes from $2.60 to $4, slack and screenings from $2.10 to $3.50.

Modification of prices also was announced for certain counties in Kentucky, Tennessee and Virginia. Prices not to exceed for run-of-mine, $2.40; prepared sizes, $2.65, and for slack or screenings, $2.15, were announced for coal mined in McCreary, Pulaski, Rockcastle, Jackson, Lee, Wolfe, Morgan, Lawrence, Johnson, Martin, Whitley, Laurel, Owsley, Clay, Knox, Bell, Breathitt, Perry, Leslie, Harlan, Magoffin, Boyd, Carter, Pike, Floyd, Knott and Letcher Counties in Kentucky, except coal produced from the thick vein Elkhorn district in the three last named counties; for mines in the counties of Scott, Campbell, Claiborne, Anderson and Morgan in Tennessee and for coal mined near St. Charles, Lee County, Virginia, by the Darby Coal Mining Co., Black Mountain Mining Co., Virginia Lee Co., Old Virginia Coal Co., United Colliers' Co., and the Benedict Coal Corporation.

Special prices were fixed for the Blue Gem seam in Campbell County, Tennessee, and the same seam in Whitley, Knox, Clay and Bell Counties, Kentucky, as follows: Run-of-mine, $4; prepared sizes, $4.25; slack or screenings, $2.75.

Miscellaneous Washington News

Among the tasks which Dorsey A. Lyon, superintendent of the Bureau of Mines experiment station, has blocked out for the Seattle station are the following: A detailed study of coal mining methods in western Washington; extension of aid in the development of Alaskan coal fields; coal-washing methods and mine ventilation.

* * *

Lack of properly qualified clerical help has been retarding the compilation of statistics for the special use of the Fuel Administration. In an effort to aid in the remedying of this situation, the Guaranty Trust Co., of New York, has sent eight of its clerks to help in this work, which is being conducted under the direction of C. E. Lesher.

* * *

Shipments of coal to the Northwest up to and including Nov. 3 totaled 23,348,100 tons, according to figures furnished by the railroads' war board. During the period between that date and the close of navigation, it will be a comparatively easy matter to reach the 29,000,000 tons, the estimate of the maximum amount which will be required, it is stated.

* * *

New offices of the Fuel Administration are being constructed, along with temporary quarters for other Government activities, on the vacant space just off Potomac Park, near the Pan-American Building. At present the Food Administration is housed in two dwellings on Sixteenth St. Neither is adapted for office purposes, and the work is being conducted under a handicap as a consequence.

* * *

Additional state fuel administrators have been appointed as follows: Akansas, H. C. Couch, Pine Bluff; Kentucky, W. B. Bryan, Louisville; South Dakota, W. G. Bickelhaupt, Aberdeen; Tennessee, W. E. Myer; Missouri, Wallace Crossley, Jefferson City; West Virginia, J. Walter Barnes, Fairmont; Wyoming, Augustine Kendall, Rock Spring; Texas, Wiley Blair, Dallas; Colorado, Wm. J. Galligan, Denver.

* * *

Redistribution of coal held in excess of actual requirements will be undertaken by the Fuel Administration if it should become necessary. Investigation into this matter now is being conducted. Redistribution, if undertaken, will extend to domestic users who are hoarding coal. That fuel is being hoarded is evident, the Fuel Administration points out, from the fact that coal deliveries at many places are considerably in excess of those for the past year.

* * *

Steps are about to be taken by the fuel administration to insure a speeding up in the movement of coal cars, both loaded and empty. It is probable that such cars will be given priority over those carrying other kinds of freight, with the exception of perishable food products and livestock. The use of coal cars for any other commodity will be prohibited. An effort also is to be made to systematize more thoroughly the movement of munitions and other military supplies. In numerous cases it has been found that these materials are being given priority when their more deliberate movement would have met every requirement.

Convictions for Contravention of Alberta Mines Act

From W. Shaw, District Inspector of Mines, Blairmore, Alta., Canada, under date of Nov. 1, *Coal Age* has received the following communication:

I beg to call your attention to the inaccuracy of a statement made by T. Edwin Smith, in his paper, "The Man Who Will Not Obey," which was published in the issue of *Coal Age* dated Oct. 13, 1917, and in which he stated that "in 1916 four prosecutions for contraventions of the Mines Act were recorded." I take it for granted that the above statement refers to the Province of Alberta.

If Mr. Smith had consulted the annual report of the Department of Public Works, of the Province of Alberta, 1916, he would have found 39 prosecutions for contraventions of the Mines Act recorded there; 33 workmen and 6 officials were prosecuted, two of the cases were dismissed, making a total of 37 convictions.

The Labor Situation

General Labor Review

The labor difficulties now all center around the providing of wage increases similar to those granted in the Central Competitive Region and the settling on penalty clauses such as the same region has approved. After the first contract is signed it seems an easy task to conclude similar agreements in other regions, but in the other bituminous regions there are always men who look to make all manner of changes when any single change is granted in the Central Competitive Region. They are not contented to have a large concession; they want something special. Any labor leader can get the regular concession, so, many of them are anxious to get more, just to show how active they are. Then there are local difficulties which come up whenever a scale is corrected.

Penalty Clauses Must Be In Every Contract

The present condition is more difficult than usual as the Fuel Administrator has insisted on ample penalty clauses, and in some sections the penalty clauses now in force are less drastic than the Fuel Administrator desires; while in other sections there are no clauses at all. All the strength of the Administration is back of the requirement that these clauses be written into every contract.

We have but little faith in clauses. We believe far more in patriotism. We are confident that men who are well instructed in their duty to the nation will do it without a penalty. No one likes to pay a fine—mine worker or operator—even a fine of a dime or a dollar. We do not blame the Administrator for demanding it, but we hardly wonder that the mine workers do not take kindly to it. As much energy spent in creating a patriotic spirit would give better results.

A third difficult exists in the anthracite region, where the mining of coal is essentially different, making the equivalent increase somewhat hard to determine.

Southwest Should Give Garfield Its Pledge Also

In the Southwest the mine workers are disposed and did in fact strike to get just what they wanted. Alexander Howat has promised to hold them off till their meeting of Nov. 12. They will do well to sign up at that time, as the concessions are generous and the penalty clause is fair. Surely the men of the Middle West have the interests of the general public at heart. If not, it is time to send a deputation to arouse the right national spirit.

The Michigan miners also protest against the contract, one cannot see why. They surely cannot want to be upbraided as "profiteers," but that is just what they are. The Fuel Administrator is making them and all the mine workers throughout the country a more than fair proposition, and they should accept it with enthusiasm.

Central Pennsylvania Does Its Bit For Peace

The representatives of the central Pennsylvania mine workers (District No. 2) have been meeting with the representatives of the operators in Washington, D. C., and as a result a scale has been agreed on and work will continue. There is nothing in the new scale peculiar to the second district. The day laborers get an increase of $1.40 a day, the pick and machine miners receive an advance of 10c. for a net ton and 11.2c. for a gross ton. The advance is effective from Nov. 1 and remains in force for the duration of the war or not longer than two years from Apr. 1, 1918. If approved by the international conference at Indianapolis in January, the scale will remain in force till Apr. 1, 1920.

The central Pennsylvania mine workers have worked steadily, anticipating the signing of the scale. The Kansas mine workers have tried to influence a decision in their favor and against the National Administration by quitting work. According to some advices, about 85 per cent. of 14,000 miners in the Kansas district struck. Telegraphic advices of Nov. 7 show that most of the mine workers in Crawford and Cherokee Counties in Kansas who walked out on Oct. 25 returned to work Tuesday morning, Nov. 6, when the order of President Howat arrived. There were only eight mines still idle, and the men in these went to work the next morning. There are now no strikes in Kansas except in the Osage field, where a controversy of several weeks still continues. The resumption will increase the output by 25,000 tons per day.

Ohio Miners Strangely Scared by Old Penalty

The mine workers in Ohio, though usually thought to be more patriotic than those in Illinois and Indiana, nevertheless were induced around Bellaire to go on strike. It was alleged that some parts of the new scale were not clearly understood. The men were idle for two days. The mine workers seemed to believe that the penalty clause was some new and terrible thing, but were quite reassured when they were told that it was the same penalty clause as had already been "in operation," but which they had repeatedly violated and which they were now violating yet again.

It is pleasing to record that in Ohio men are coming back to the coal mines from other employments that formerly were paying a higher wage than was paid to the mine worker. Another interesting feature about the new adjustment is that the Pittsburgh operators were more liberal than their agreement required them to be. Seeing that the Administrator increased prices three days before the increased wages would become due, the operators increased wages three days earlier than their contract required.

Nonunion Men Got Increase at Double Quick

The nonunion districts are not being slow to make wage concessions similar to those in the union districts. In fact the work of readjustment in nonunion districts is much easier. They don't have to obtain consent from their men to the increase in wages. They ruthlessly force the advanced wage upon the mine workers whether they would have it or not.

The Somerset County Coal Operators' Association and operators of nonunion mines at Johnstown, Penn., met on Nov. 1 and agreed to notify their employees, who number about 20,000 men, that they would grant an increase in wages equivalent to that provided in the Central Competitive Region. All the members of the Somerset County Coal Operators' Association were present. Thus the nonunion men got their assurance of higher pay before the union men. Most of the mine workers along the Salisbury branch of the Baltimore & Ohio R.R. are still on strike for recognition of the union.

The Consolidation Coal Co., the largest employer of labor in Kentucky, West Virginia and Maryland, which has no contract with the union, has granted the mine workers an increase averaging $1.40 per day, which becomes effective as from Nov. 1.

What Judicious Preachments Will Do for Peace

There is no question that much trouble can be averted by timely action of patriotic men. The United States Fuel Administration has settled a strike at the Perry County Corporation mines, Coulterville, Ill., merely by the making of recommendations. It is clear that from henceforth the wage scale is practically the wage scale of the Government. It may be criticised, but it must be obeyed just as the price scale may be subjected to all kinds of unfavorable comment but must be always regarded as mandatory. All good citi-

zens will accept the wage scales and price scales advocated by the Fuel Administrator; they will at least not try to modify them by quitting work.

To show how needless many of the strikes are, two ntucky layoffs may be instanced. At the mine of the ork Ridge Coal and Coke Co., near Middlesboro, Ky., about 500 mine workers went on strike on Nov. 1 because a motorman had been refused a working place in the mine. He wanted to become a coal miner. After he had quit work the company offered to reinstate him in his old job, but he did not want it. He demanded work as a miner though the company had all the men at that work whose output they could handle with their transportation force. The miners went on strike, apparently for the express purpose of crippling their own output by causing a shortage of haulage facilities. Could anything be more futile?

The Crystal Coal Co. in the same region has had a strike because of a disagreement over a checkweighman. The man sworn in for that job did not meet with their approval. The court disapproved of the man whom the mine workers had selected as their representative.

At Lincoln, Ill., there was a strike that seems to have been better justified. It involved about 150 men who are normally employed by the Citizens Coal Mining Co. The company refused to sell coal to the mine workers and they went on strike. The company has now promised to sell enough to the men for their immediate requirements and they have returned to work.

Copperheads at Illinois Mines

Though the Illinois Mine Workers have just received the generous benefits of the Washington agreement, subject to acceptance of the penalty provision, and have barely worked a week since their last strike, they are getting ready to lay off again. They do not like the penalty clause because it will prevent them from going on a strike to subvert the agreement just signed. When the mine workers at 21 mines in the Kansas fields went on strike against the penalty provision, the mine workers of Illinois received the news with approbation.

The mine workers are by no means ready to applaud the patriotic action of their leaders. Peoria mine workers have held a meeting and adopted a resolution calling for the unseating of State President Farrington. The drivers and other company men are sending numerous complaints to the Springfield headquarters.

At Collinsville, the officers of the union have notified Superintendent James McKiernan of the Lumaghi Coal Co. that they will not permit that concern to supply the St. Louis Smelting and Refining Co. with coal unless it recognizes the striking smeltery workers.

That the miners were not justified in demanding an increase in wages is shown by the payroll of one of the largest operating companies in Illinois, which was laid open to a "Coal Age" correspondent. It showed that for the two weeks preceding the last strike the men employed by that company earned from $26.50 to $75 a week. The smallest amount received by any miner employed by the company for the two weeks was $53, and the largest amount received by any miner was $150.49.

The man with the lowest wage had lost time on account of sickness. Two men received $134 each, one received $120 and another $119. The majority of the men received from $75 to $90, and many of them did not work full time. Most of them, the officials of the company said, worked ten or eleven days. The man who received the $150.49 shoveled 246 tons of coal, an average of 20½ tons a day. The explanation of his earnings given by the officials was that he worked while others soldiered and did not permit pit committees to browbeat him into curtailing his output.

It is the experience of Illinois operators that efficiency is in inverse ratio to rate of compensation.

President Farrington has sent a splendid letter to all the locals in the state, in which he says:

"This nation is at war. War means sacrifices and we cannot escape our share and by no means can we hope to escape our duty. Our acts must be founded on reason. The nation's sons are going to war. As time goes on thousands of homes in this nation will be stricken with poignant grief and our people will be in no frame of mind to temporize with those who do not do their duty. The Government needs coal and the public must have it. We may hamper the military operations of the Government by refusing to supply coal, but we cannot hope to prevent the final accomplishment of its objectives. The Government will follow its course without hesitation and without weakness, taking no account of persons, and they who stand in the way of its success will be regarded as enemies of the Government.

"If we do our duty by the Government and by the public, we shall retain the goodwill of both. If we do not, we shall be treated as enemies of the Government and be condemned at the bar of public opinion; and we cannot hope to stand out against two such powerful forces. We should not forget that there will be another day. The war will not last always, but the miners' union must. We must look to the future. If we do our duty throughout the war, no one can deny us just consideration after it is over. If we do not, then surely we will not be able to overcome our enemies, and the miners' union will surely perish by reason of the discredit brought upon us by our failure to do our duty in this great crisis.

"But war or no war we must not forget that we still have a miners' union in this state, with well defined rules for the government of its membership, and that the membership must obey those rules, respect constituted authority and maintain discipline in the ranks if our union is to be saved from disintegration.

"Then too, we should not think that a joint agreement entered into in good faith by our union is a mere "scrap of paper," to be torn up and cast to the wind as may suit the whim of those who do not seem to understand their responsibilities. Remember that we have a joint agreement which does not expire until Mar. 31, 1918. Any improvement in any of its clauses that we may be able to secure through the medium of orderly joint conference should be regarded as so much gained and not as a license to demand at this time the correction of all the objectionable working conditions in the state nor as a license to transgress our constitution, defy officers and to strike in defiance of every fundamental of the United Mine Workers of America."

Howat Orders a Return to Work

Alex Howat, a district president of the United Mine Workers of America, has ordered the striking miners in the Kansas district back to work pending the Kansas City convention, which is to meet on Nov. 12. At this meeting the automatic penalty clause will be discussed. Relative to the situation the following statement has been made by Dr. Harry Garfield, being given out at Fuel Administration headquarters:

The spirit of the understanding between the operators and mine workers on the one hand and the Fuel Administration on the other is that mining operations shall be continued without interruption during the period of the war. At the conference held here last Saturday night with the representatives of the operators and mine workers of the Southwestern districts, I undertook to make plain that I recommended the inclusion of the automatic penalty clause in the President's order because the great majority of the miners of the country had agreed to it as a suitable and useful way of protecting themselves against the extreme, radical and disorderly element.

Mine workers are for the most part good American citizens. They resent as much as any other class an unwarranted interruption of work, especially in the present national crisis. So long as the great majority of the United Mine Workers of America favor the automatic penalty clause, it is entirely proper and indeed in accordance with the principle of the majority rule, that it should be made a condition of an advance in the price of coal.

The people of the United States are willing to pay a reasonable increase in the price of coal at the present time if they can thereby be sure of the supply. They realize that the demands of the Government because of the war are enormously increased and believe that it is only fair to ask operators and miners to agree to keep the production at a high point if they are to be allowed to increase prices or wages. Under the circumstances I can have but one object in view—namely, to do everything in my power to keep the mines in operation and to increase production. This I con-

ceive to be also the bounden duty of every loyal American engaged in the mining of coal. Of course, the automatic penalty clause must not be made the occasion for oppression either on the side of the operators or of the men.

If honest differences arise, they must be thrashed out by the representatives of both parties without disturbing the operation of the mines. All the machinery provided for in agreements between operators and miners must be used and every effort exhausted to reach an agreement. And also at the nonunion mines, the operators and mine workers must use every means possible to agree.

If in either case agreement is not reached, the facts must be laid before me for decision. I will act promptly, and I hope it is unnecessary to say, with justice to the contention of each party.

Michigan Men Don't Want Penalty

Representatives of operators and mine workers of the Michigan district, now in joint convention at Saginaw, Mich., have come to a deadlock on readjustments of wage advances and in the working out of a penalty clause satisfactory to the United States Fuel Administration.

Harry A. Garfield, the Fuel Administrator, has invited joint committees of the operators' and miners' associations to come to Washington for consultation. The Fuel Administration expects the mines in that district to operate pending a settlement.

Peace News from the Pacific Mines

On Oct. 31 the Washington coal operators and mine workers came to an agreement which will become operative as soon as it is approved by the Federal Fuel Administrator. It has three interesting variations from the Central Competitive contract. The increase in wages of contract miners is 12½c. per ton. There is a penalty clause by which men who lay off without permission of the mine foreman are to be fined. Also all boys will receive $1 per day additional wage.

The increase to adult day laborers is, as elsewhere, $1.40 per day. The contract also runs to the end of the war or until Sept. 1, 1920.

Leave It to Your Uncle Dudley

H. A. Garfield, the United States Fuel Administrator, issued on Nov. 5 the following statement:

To further assure continuous and increased production of coal during the period of the war, the United States Fuel Administrator directs that no independent action be taken by either the operators or mine workers to force any settlement in dispute without submitting the matter in controversy to the United States Fuel Administrator. This applies to all districts whether joint relations have been established or not. Where joint relations have been established, the regular machinery prescribed in the contract for adjustment of disputes shall first be used and remedies exhausted. Work at the mines shall continue without interruption pending the final settlement of the question in the manner indicated.

A Place for Local Unions To Meet

On information that the Glen White Coal Co., Glen White, Raleigh, W. Va., refused to provide a meeting place for the local union, as stipulated in a miners' and operators' agreement, Harry A. Garfield, United States Fuel Administrator, sent from Washington the following communication to the manager of that company:

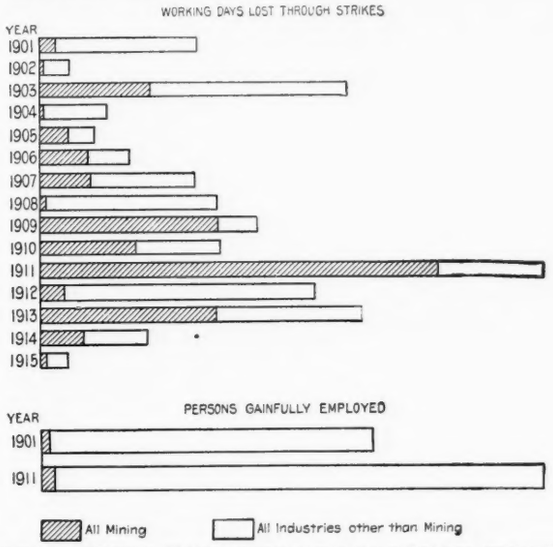
I am informed that in violation of the agreement you are refusing to provide a place on the company's property for the meetings of the local union. I do not pretend to pass judgment as to the true purpose of this contract provision, but would urge that no merely technical construction be resorted to such as will result in the cessation or decrease of coal production. Please advise me as to the facts and take such steps as will continue the mines in operation. If you are not able to agree with the men, I will set a time for a conference with both sides here.

Government Control in Canada

Government control in Canada is failing just as it has too often failed in Great Britain and in Australia. The headstrong men in the Fernie mines, British Columbia, came out on strike, Oct. 24, against the Canadian Government. They demand that certain mine disputes be settled at once and that all the nonunion men be compelled to join the union.

There are barely a dozen of these nonunion workmen, and one would think it would not be necessary for patriots to combine to force the beneficent hand of the Government, but apparently that does not seem to be so patent to the miners of Canada, who are the most discontented of all the working people in the Dominion. Especially are the Western coal miners of Canada unruly.

Below is published an official table and a chart showing how insignificant coal mining is compared to the other industrial life in Canada, and yet how important the industrial unrest of coal mining is compared with the unrest in the other industries of the country.



MINE WORKERS HAVE FEW MEN BUT MANY STRIKES

Director of Coal Operations Armstrong has already acted once on the timbering question that is in dispute at No. 1, East mine. He granted an increase over the figure announced by him last August for that work. This was arranged to date Oct. 1, but the men want it to date back to August.

WORKING DAYS LOST IN MINING

Year	Number (in Thousands of Days)	As a Per Cent. of Days Lost in All Industries
1901	56	9
1902	10	8
1903	440	36
1904	10	4
1905	114	53
1906	188	52
1907	203	33
1908	16	2
1909	711	82
1910	377	53
1911	1,593	79
1912	89	8
1913	703	55
1914	169	39
1915	17	16

PERSONS EMPLOYED IN MINING

	Number (in Thousands)	As a Per Cent of Persons in All Industries
1901	37	2.1
1911	64	2.4

This strike only affects 900 men, but it is a clear symptom that the Government as mine manager is not any more immune from disorder and strikes than the ordinary employer. In fact the Government as an employer is subject to two forms of coercion—industrial and political.

(Note—The miners are back at work again pending an investigation by the Dominion authorities.)

Editorials

THE coal operator, mine manager, colliery superintendent and mine foreman are largely the means by which and through which the mine workers should get their information regarding the affairs of the nation. We wonder sometimes why there is not a more patriotic response from the miners and why they so often force the hands of the union leaders and cause them to take action which they well know is embarrassing to the nation.

The mine worker does not enter into the nation's life. He does not have a chance to know what the country needs. Outside of the anthracite region, the local papers do not tell the mine workers enough about national affairs. The miner is just as red-hot a patriot as any of us, but he does not know; and it is the duty of the officials of the company who have a chance to know, who get into the tide of national affairs and can know, to lead him to the recognition of his duty.

It is all very well to berate the mine worker for holding his narrow class view of affairs. What has the bituminous operator ever done to bring to his notice the larger demands of the situation? In the anthracite region it is different. There, perhaps, such activity was less needed, the newspapers being well edited and quite generally distributed. Nevertheless, the operators promoted flag-raisings everywhere, and the bud of patriotism under the genial warmth of encouragement burst into full flower.

* * *

AND patriotism is needed if the coal industry is going to supply the fuel needs of this country. When every man has mined enough to support himself, his wife and his family, he still should put in his best licks for the war. He should label his extra cars "For the Germans" Under the "Trading with the Enemy Act" they couldn't be delivered, of course, but they will reach their destination indirectly with the shot and shell that hurtles over the Lorraine frontier.

The subscription for the second Liberty Loan was by no means satisfactory. That must needs be stated boldly, for it will not generally be admitted. The final subscriptions were made largely by the banks and wealthy men, who will have to remove it from business in order to subscribe it to the Government. When they offered their money some of the largest of these contributors must have been scheming in their minds as to the credits they would have to withdraw, should the Treasury accept all or nearly all of their pledgings.

It is new wealth that Uncle Sam is looking for. He does not want to get the money to run the war by restrictions of credit or by foreclosing of mortgages. It is true the farmers are now able to pay off all their old debts and start anew, but there are a number of city mortgages which the mortgagors can just now, less than at any other time, afford to pay. A moratorium for the aid of such people has even been proposed.

To pay this money to the banks, and to raise money for loans, stocks have been sacrificed so that the whole list has dropped heavily. That would not matter perhaps if it did not weaken credit and make the position of the banks precarious. It is clear that Liberty Loans must in future be floated out of the present savings of the public, and the people must be induced to put aside enough to buy not one $50 bond every year, but several $50 bonds every two or three months. "Buy a Liberty Bond" is like "Buy a Kernel of Rice"—good advice, but grossly inadequate to the situation.

If we would float bonds as fast as Secretary McAdoo asks for them, we must have an army of saving workmen who will work harder than ever and save everything beyond the irreducible minimum; and that minimum will have to be something less than any of us at present dream of, less than the American standard of living. Part of the sacrifice can be avoided by working harder, but we shall have to skimp even then.

* * *

BUT to secure a larger output and greater saving, patriotism is needed. To every man must come a clear vision of men more heroic than we who are squatting in squalor in the dugouts along the Lothringen border, and of our men starving in German prison camps. Before we can serve, we must first see. The mine workers will never serve until they are made to see; and how shall they learn without a teacher?

There are plenty of men who can tell the tale and tell it so that it will work the miracle of patriotism. Every county has its willing spellbinders who, if the right parties arrange a meeting, will tell the story of the noble work confronting our American soldiery and the almost equally noble work facing those who stay at home.

The latter is perhaps harder, grimmer work, because the vision to the man remaining at home among familiar scenes too often grows dim while it is ever bright and clear at the front; but the Government has promised certificates of honor to those who perform that duty. These certificates are Liberty Bonds. Let us hope that the Government when it redeems them will find a way to merely mutilate them so that those who have done their duty may be permitted to keep them as signs to their children that they, while not serving at the front, served faithfully in the rear.

When we find that the soldiers and sailors out of their meager pay have in proportion to their numbers subscribed more than our civilian citizenry, we wonder if after all we are really worth fighting for. If we civilians—coal miners, coal operators and others—cannot for a few short years live for the war, what right have we to ask that they, our best and our bravest, give themselves to die for it. While they fight the enemy at the front shall we squabble in the rear? Rather with one mighty combined effort we will labor to give to our soldier lads every assistance our efforts can afford.

Misrepresenting Dr. Garfield?

THERE is much provocation for an editorial denouncing Dr. Garfield's neutrality. Papers are constantly publishing material stating that Dr. Garfield is extremely wrath with both the miners and operators about the present wage scale. Thus the New York *Times* on Nov. 7, quoting Dr. Garfield without quotation marks, says: "The people, he said, were willing to pay a reasonable price for coal but expected patriotic action on the part of miners and operators in return instead of quarrels over wage increases which defeated the very objects in view."

Whether Dr. Garfield actually said it or not, it is the veriest untruth. The coal operators have been willing to revise their contracts most liberally to please the mine workers. They have placed themselves most readily under the direction of Dr. Garfield. It is the mine workers and they only who have demanded a new contract, and it is entirely from their ranks that come the objections to the penalty clause.

There is no use for any such paralyzing neutrality. It is a time to tell the truth and not rant against the good and the bad alike in the sacred name of neutrality.

However, on reading Dr. Garfield's general press matter little trace of such neutrality now appears. He knows his enemy and faces it. He knows also that the mine workers' chief leaders and the better mine workers are not among the enemies of the nation in threatening to strike for something they are not entitled to receive. They now fear a strike and deprecate it as much as anyone. There is a large fund of patriotism among the mine workers. So there is the more reason to speak manfully about the copperheads still to be found in their ranks.

It does not do, as some have done, to condemn everyone within earshot like a washerwoman in trouble. We tried that when in the fair name of neutrality we endeavored to smooth over our remarks to Germany by slaps at Great Britain. That attitude has come back to plague us now that we are at war. Our own words are thrown in our teeth, and doubts have in some cases supplanted energetic action. Similarly, we must not let the public confuse the operators and loyal mine workers with that "little band of unpatriotic men" in the mine workers' ranks who would destroy the Union to promote union politics.

Applicable Economy

THESE are not ordinary times. The whole nation as well as its army and navy is engaged in war. This struggle is largely one of economics—or rather economies—and, other things being equal, that side will win that can most effectually utilize its natural resources—not only its men and money, but its agricultural lands and its mineral deposits as well.

We have heard much recently regarding conservation, about saving foods, fats, sugar, coal, etc., and some of us have doubtless made attempts more or less crude and unsuccessful at such economies. It is questionable, however, if many of us have fully realized that if we save the product of coal we save coal. In normal times the question of saving, say, the heat or a portion of the heat that escapes up the smokestack of the power plant is purely one of engineering economics; that is, it is a simple question of will it pay in dollars and cents to install a fuel economizer.

Of course, the correct answer to this question of "will it pay" depends in almost every instance upon the price of coal. Under present conditions, with the price of coal fixed by Uncle Sam, improvements that might have resulted in decided savings had coal prices been allowed to take their natural course are now out of the question. This naturally results in the loss of a certain amount of perfectly good heat, which in turn may be translated into pounds and tons and carloads of coal.

While the fixed price of coal positively forbids the practice of certain economies, there are others that may be followed without appreciable outlay. Take the question of plant and town lighting as an example. It has been the rule at many coal-mining villages to keep the street lights burning all night every night in the year. Obviously there are many nights, especially in the winter, when the moon is full or nearly so and the ground is covered with snow, when lights are not needed at all or at most only for a few hours.

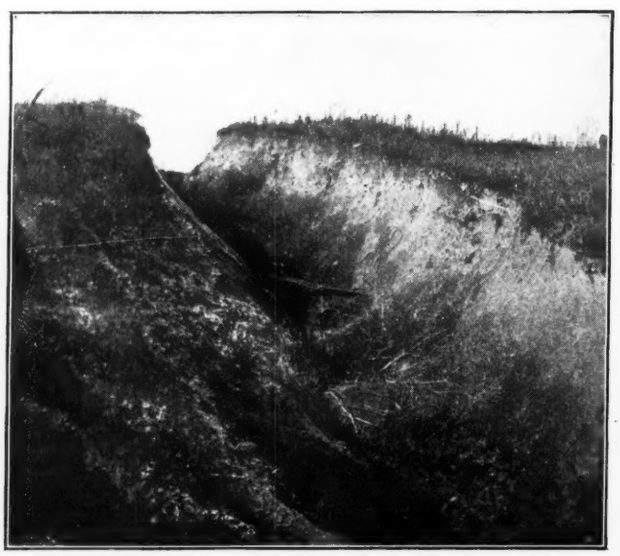
These savings are not only applicable to street lighting. There are many lights about the plant, in the power house, the machine and blasksmith shops, pumphouses, stable, warehouses, stores and in dwellings that might well be burned fewer hours. Painting the interior of many of these buildings white or whitewashing them will so reflect the light as to make it unnecessary to resort to artificial illumination as early in the evening as would be the case if the walls and ceiling are allowed to retain their dingy coat of oil, dust and soot. Keeping windows and skylights clean will also help immensely.

Of course, no individual lamp, be it a little incandescent bulb that takes only 10 watts or an old open arc that requires about 1 hp. at the engine crankshaft, will through nonuse save by itself much energy or fuel. In the aggregate, however, the amount that may be saved in lighting would be quite appreciable at many coal-mining and industrial plants. As the frugal Scotch say, "Many mickles make a muckle."

Helping the Government

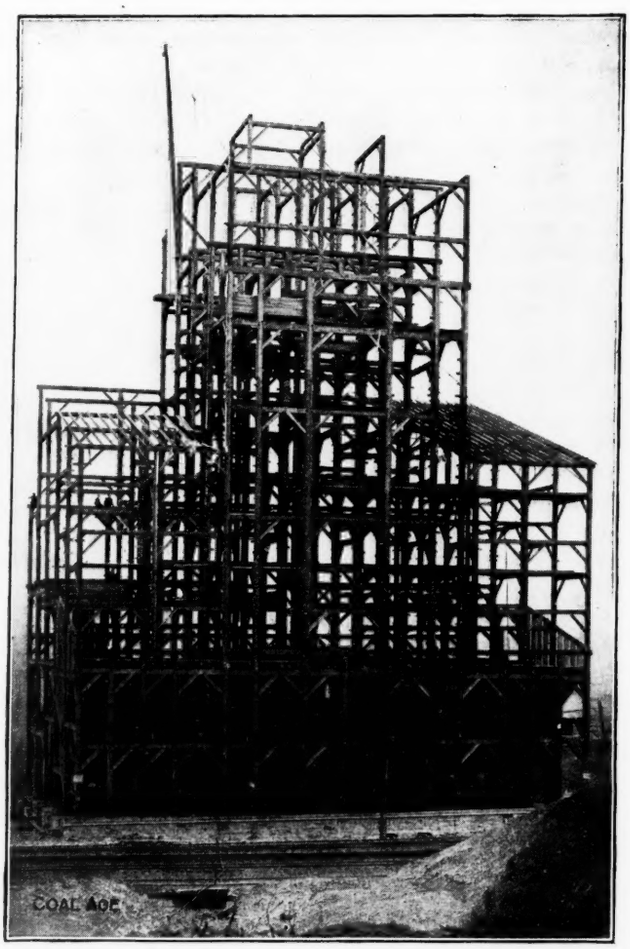
WE MUST awaken to a realization of the truth that this country is at war. We must so adjust our lives and thoughts and actions that they shall in no way hinder the Government in the carrying out of the one object now before it—a speedy war to bring about a speedy peace. Mine owners and mine officials must help spread the doctrine. They must continually bring to the attention of their men, particularly the foreign element, that this war is everybody's war—that they also have much at stake. A simple way of doing this, though one that may be far-reaching in its results, lies at the hand of every mine operator: On every bulletin board, on every pay envelope, on every notice—in fact, anywhere and everywhere that men may read—have some slogan that will keep before the minds of the readers the fact that we are at war—every mother's son of us. And keep continually pounding this fact home until the truth sinks deeply into everyone's heart. The Lord knows there are a good many of us who need to be fired with a new spirit.

Snapshots in Coal Mining

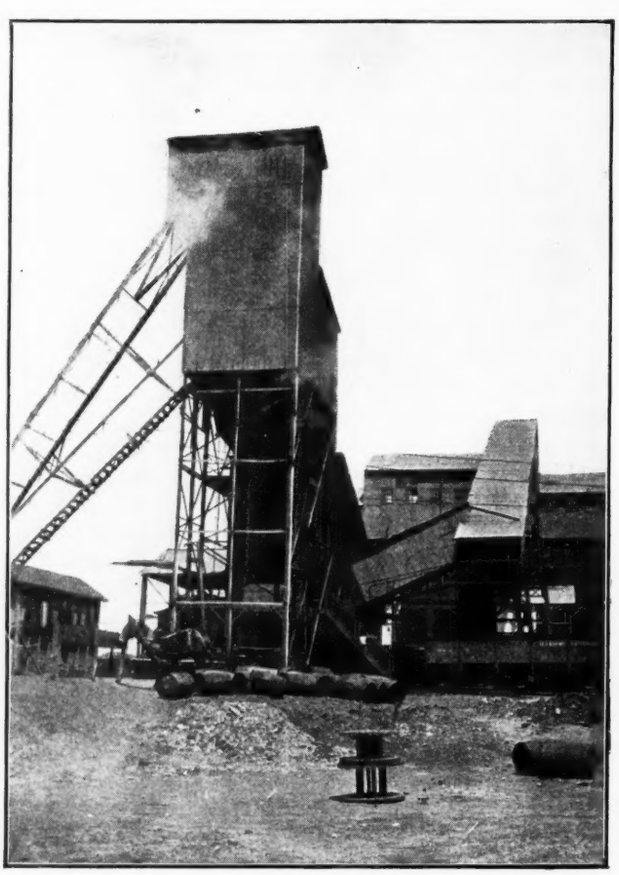


SURFACE BREAK IN FAIRMONT REGION

When the coal panels are removed the roof breaks up to the surface, even when, as here, the cover is 260 ft. deep. The width of the crevice at the top is 13 feet



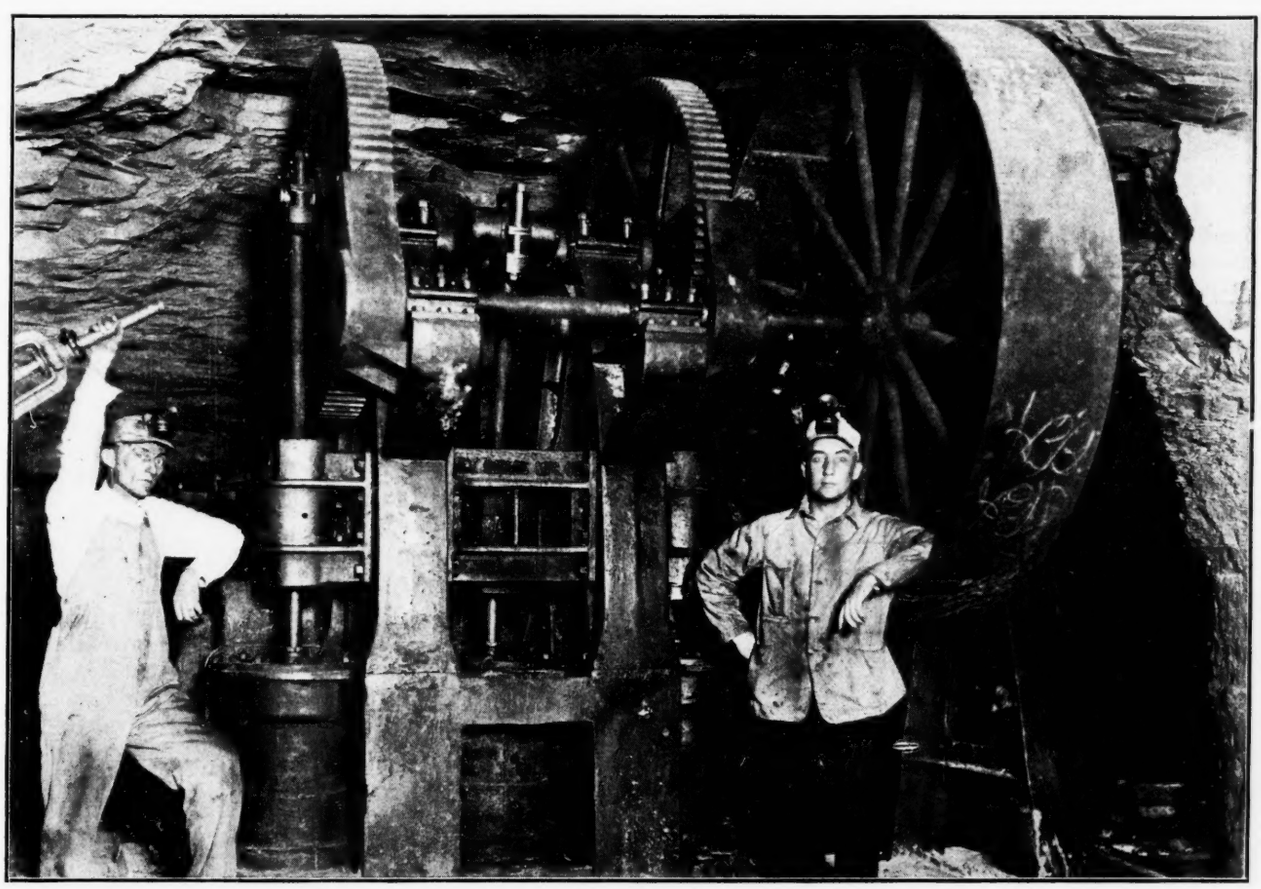
DIAMOND BREAKER IN PROCESS OF ERECTION, DELAWARE, LACKAWANNA & WESTERN, COAL DEPARTMENT



PEABODY NO. 3 TIPPLE AT MARION, ILL.

JEFFREY LOCOMOTIVE, BLUE DIAMOND COAL CO., LEXINGTON, KY.

NO. 5 TIPPLE OF THE NEW RIVER COLLIERIES CO., ECCLES, W. VA.; NO. 6 TIPPLE CAN BE SEEN IN LEFT BACKGROUND



GOULDS 1500-GAL. MOTOR-DRIVEN PUMP IN ELEVENTH LEFT ENTRY, SAYRE MINES, SLOSS SHEFFIELD STEEL AND IRON CO., SAYRE, ALA.

Discussion by Readers

Important to Contributors

It has been our custom to acknowledge the receipt of all contributions to the discussion and inquiry departments of *Coal Age* at the time when they were prepared for publication and to announce the date of the issue in which they might be expected to appear. Owing, however, to the increased cost of mailing correspondence, which went into effect Nov. 2, and the necessity for the elimination of all waste effort and material, this practice of acknowledging contributions will now be discontinued.

Coal Age assures all contributors to these departments, and those sending requests for answers to certain examination questions, however, that the same attention will be given to their contributions as before. All contributions that are accepted for publication will appear at as early a date as possible. Contributions that are not accepted for any reason will be filed for a short time and the contributor notified by a printed form of postal card, stating that if the return of the manuscript is desired return postage must be sent by the contributor. No return postage should be sent until the contributor is thus notified by postal card.

Few letters in the discussion department of *Coal Age* are rejected, as the purpose of the discussion is to express the various views of contributors on the different subjects, which has proved a most interesting feature of the paper. These discussions come very largely from the rank and file of the coal-mining industry and express the views of the humblest mine workers, whose names, for good reasons, are withheld at their request, together with and side by side with the views of managers, superintendents and other mine officials.

The manufacturers of mining equipment have also availed themselves of the advantages of the discussion and inquiry departments of *Coal Age*, which have served to bring them in closer touch with the operating departments of the mines and, incidentally, make their equipment better adapted to the work to be performed. We hope that this relation will continue with increased benefit, both to manufacturers and users of mining equipment.—Editor.

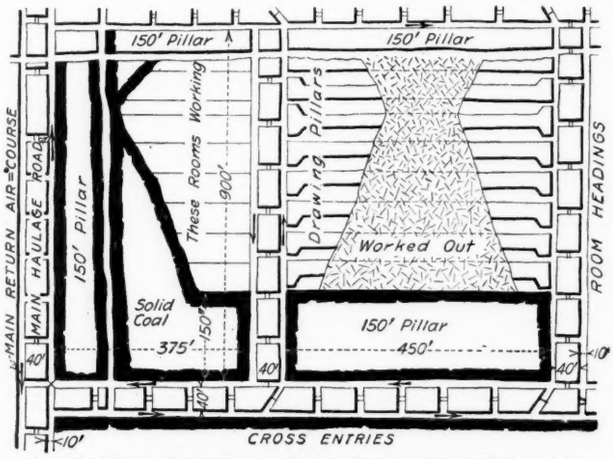
Working Pittsburgh No. 8 Coal

Letter No. 7—Having been foreman of various mines operating in the Pittsburgh No. 8 coal, in eastern Ohio, I would like to give my views in regard to the best method of working that seam.

From my experience in that district, there was much trouble from squeezes, which would frequently come on before the butt entries had been driven up the full distance. When that occurred it was very difficult to keep the entries open, and the result was that much coal was lost beyond recovery. At the mines where I was employed, the conditions in respect to thickness of seam, depth of cover, etc., were much the same as those described by E. O. Carney, in his letter, *Coal Age*, Sept. 22, p. 509.

I agree fully with the suggestion that has been already made by previous writers, that the chief cause of trouble in the working of this seam is the fact that too small pillars are left for the support of the roof. There is no doubt that successful working under the conditions that prevail in that district require the most careful study, and close watch must be kept in order to avoid trouble and loss of coal. Allow me, here, to present a sketch showing a plan of working that I believe would reduce the loss of coal.

The accompanying figure shows two pairs of cross-entries driven to the right of the main heading and



PROPOSED METHOD OF WORKING THE PITTSBURGH NO. 8 SEAM

about 900 ft. apart. My plan is to drive butt or room headings off these cross-entries so as to meet each other. These butt headings are driven, say 450 ft. apart, thus providing for rooms about 75 yd. in depth. As shown in the figure, rooms are first turned off the haulage road and driven up as rapidly as the entries are advanced. The rooms are driven on 50-ft. centers and opened to a width of 24 ft., which makes the room pillars 26 ft. wide. All entries are driven 10 ft. wide, with 40-ft. pillars between them.

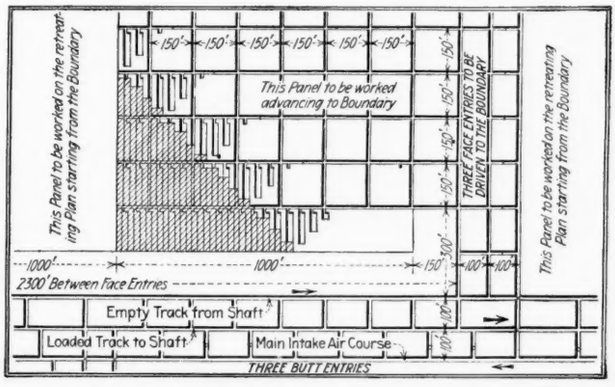
Owing to the bad roof, the room pillars should be drawn back to within 60 ft. of the entry as quickly as the rooms reach the limit. This will provide ample protection for the haulage road until these entries are finished. From the point where the butt headings meet, rooms should be started on the aircourse and driven up to the limit, and the pillars drawn back as quickly as the rooms are finished. As indicated in the figure, this work on the aircourse should proceed on the retreating plan. The entry stumps and pillars are also drawn back as quickly as the drawing of pillars in the rooms will permit.

My contention is that the adoption of this plan will give the roof an opportunity to break in the goaf. The

pressure on the entries will thus be relieved and the danger of squeeze avoided. By driving the butt entries to meet each other, the work proceeds more quickly, which is an important consideration if squeezes are to be avoided in working this seam.

Oak Hill, W. Va. WILLIAM DICKINSON.

Letter No. 8—In regard to the best method to be employed for working the Pittsburgh No. 8 seam of coal, allow me to suggest that a modified room-and-pillar and longwall retreating method, combined as shown in the accompanying figure, should produce good results.



PROPOSED PANEL-LONGWALL RETREATING SYSTEM

The method practically is the panel system of mining, which is used largely in the old country, where it has proved generally successful for working coal under a heavy roof pressure.

The plan shown in the figure is drawn to conform, as nearly as possible, to the requirements of the Alberta Mines Act. Three main entries are driven abreast on the butts of the coal. One of these is the main intake air-course driven direct from the foot of the air shaft. The other two entries are the haulage roads for the empty and loaded tracks respectively, haulage being performed here on the return of the air. As shown in the figure, the face entries are driven at right angles to the butts.

DIMENSIONS OF ENTRIES, ROOMS AND PILLARS

Both the butt entries and the face entries are driven on 108-ft. centers, the entries being 8 ft. wide and separated by 100-ft. pillars. The butt entries are flanked on both sides by pillars 150 ft. wide, while the face entries are driven with the same width of pillar on the left side only, since this side is to be worked out in a panel 1000 ft. in width, on the advancing plan, as the entries are driven. On the other side of the face entries there is left a solid pillar of coal 1150 ft. in width, which is to be worked back on the retreating plan. This provides for a 1000-ft. panel with a 150-ft. pillar separating it from the face entries.

The panels on both sides of the face entries are worked in the same manner, as far as the extraction of coal in the rooms is concerned. As shown in the plan, the entire work in each panel is on the retreating system.

Work in the panel on the left is first started by driving cross-entries on 150-ft. centers and at right angles to the face entries. Rooms are turned at right angles off the cross-entries and driven parallel to the face entries, on 40-ft. centers, the rooms and pillars between them being each 20 ft. wide. The work of driving the rooms is started at the inby end of the cross-entries and the coal worked out on the retreating plan, in such a manner as to maintain a more or less continuous line of longwall face making an angle of about 45 deg. with the entries.

The same general plan is followed in working out the panel on the right. This panel is started as soon as the face entries reach the boundary. Beginning at the boundary, cross-entries are driven and rooms turned and worked back in a continuous longwall retreating face, as before. The work of drawing the 100-ft. entry pillars and the 150-ft. pillars flanking the entries is started as soon as the line of longwall face in this panel reaches these pillars. The entire working face then extends across the panel and the pillars, which are drawn back toward the butt entries, until the entire panel and the pillars are worked out.

EXTENSION OF THE PANEL SYSTEM

As indicated on the plan, the same panel system is extended, by driving another set of face entries, at a distance of 2300 ft. from the face entries previously mentioned. This provides for another 1000-ft. panel to be worked out on the retreating plan when the face entries from which it is separated by 150 ft. of pillar coal have reached the boundary, and a similar 1000-ft. pillar has been worked out on the left of those entries.

In closing, let me say that care must be taken to keep all pillars in line and to maintain as straight a line of longwall face as possible. If it becomes necessary, owing to a slack time, to reduce the output of the mine, let this be done by stopping the rooms and entries; but let the work of drawing back the pillars continue, as it is always important to keep a longwall face moving steadily forward. The same necessity is not present in a face advancing in solid coal.

Hardieville, Alta., Canada. HUGH EVANS.

Practice of Safety First

Letter No. 3—I fully agree with Robert A. Marshall that the larger coal companies who have adopted safety rules for the operation of their mines expect those rules to be obeyed. I was much interested in reading his letter, *Coal Age*, Oct. 20, p. 693, and agree with him that when the rules are not enforced, it is more the fault of the underground officials than of the company.

A striking illustration of the interest taken by large coal companies in the safety-first movement and first-aid work in their own mines is that of the Ohio Collieries Co. This company operates a large number of mines. I am particularly familiar with the operations at mines Nos. 209, 210 and 211, near Athens. At these mines, I can say that the superintendent's constant endeavor is to eliminate any known danger in and about the operations at any cost.

The underground work is in charge of mine foremen, safety foremen and firebosses. They are instructed to talk, in a friendly way, with the men in their charge, telling them how to avoid dangers that may arise and seeing that they keep their places safe for work. Each man employed underground is taught the different traveling roads leading to the hoisting shaft and the air shaft or escape shaft. They are impressed with the

responsibility that rests upon each man for his own safety, in case of accident or possible explosion.

The safety foremen show the inexperienced miners how to blast the coal, set timbers and make their places safe for work. All working places are kept well supplied with timber and other needed material. Each miner is given a copy of the mining laws, with which he is supposed to familiarize himself.

Many Safety Devices Installed

Numerous devices are installed to insure greater safety. A checking system is employed that shows how many men have entered the mine and their location. Special rubber-lined cars are employed for delivering powder to the men and their working places. In order to prevent men from walking under the cages, the bottom of the shaft is protected with sliding doors that are operated automatically as the cage rises and falls. Special manways are provided for the men to travel, and refuge holes are maintained on all haulage roads used by the men on their way in and out of the mine. These are kept clean and free of all obstruction and are whitewashed.

Electric power and trolley lines are carefully protected at all places where men or animals must pass under them. Markers are used on all motor trips, and the cages, ropes and other hoisting appliances are examined every day before the men enter the mines. Firebosses are required to take careful measurements to ascertain the quantity of air passing in each section of the mine. A mine hospital is provided and fully equipped with first-aid supplies. These are in charge of the safety foreman.

As the result of the interest taken by the company in the welfare of its men, there exists a spirit of goodwill and coöperation in every department of the mine. There is seldom any evidence of labor trouble, as the mines of this company have experienced no shortage of labor at a time when it has been difficult to keep men in other places.

John Jones.

Athens, Ohio.

Equalizing the Load in Hoisting

Letter No. 1—In response to the request in the closing paragraph of the interesting article by H. D. Pallister, *Coal Age*, Sept. 29, p. 532, asking for other methods than those he has described, for equalizing the load when hoisting in a shaft, kindly allow me to submit a brief description of the method employed at the Walker Colliery where I was employed some years ago, at Newcastle-on-Tyne, England.

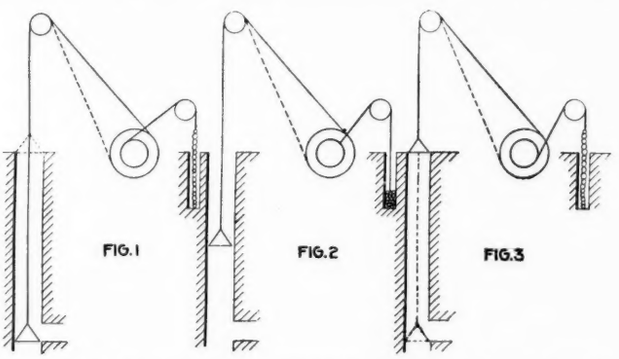
This shaft is 1200 ft. deep. Coal is hoisted from two seams, the Beaumont and the Bensham. These two seams are separated by 40 fathoms (240 ft.) of strata. Each of the two cages in the hoisting shaft has three decks that hold two half-ton cars apiece, making the total weight of coal hoisted 3 tons.

It is evident that when a hoist is half completed, and each cage hangs suspended midway in the shaft, the cages, cars and ropes in the two compartments will balance each other, and the only unbalanced load, at that moment, is the coal being hoisted. But, as one cage ascends and the other descends in the shaft, the weight of the hoisting rope is continually being transferred from the ascending to the descending side, and the unbalanced load increases.

In order to counterbalance this increasing load on the descending side a heavy chain was suspended over a pulley in such a manner that the chain hung in a smaller shaft, called the "staple shaft." To illustrate the manner in which this counterbalance acted I have drawn the three diagrams shown here.

In Fig. 1 the loaded cage is shown in full lines at the bottom of the shaft, while the empty cage is shown in dotted lines, at the top of the shaft. At this stage of the hoist the counterbalancing chain is shown suspended at full length, in the staple shaft on the right of the figure. The rope supporting this chain, it is seen, will unwind from the smaller staple drum as the hoisting rope supporting the loaded cage winds on the hoisting drum. These drums are connected so that they revolve at the same speed.

In Fig. 2 both the loaded and the empty cages are shown suspended midway in the shaft, while the chain



COUNTER-BALANCING A DOUBLE-COMPARTMENT HOIST

is seen resting on the bottom of the staple shaft, there being no counterbalance required at this stage of the hoist. Now, as the loaded cage continues to rise and the empty cage to fall in the shaft, it is evident that the chain will again be lifted by the winding up of its rope on the staple shaft during this half of the hoist.

In Fig. 3 the loaded cage is seen to have reached the top of the shaft and the empty cage rests on the bottom, while the counterbalancing chain is shown again suspended at its full length in the staple shaft, ready to assist the starting of the next hoist.

Calculating the Length and Weight of the Counterbalancing Chain

In calculating the required depth of the staple shaft and the weight of the chain necessary to counterbalance the weight of the hoisting rope hanging in the shaft, it is only necessary to remember that, since the chain falls and rises again during a single hoist, its suspended length must be one-half the depth of hoist divided by the ratio of the diameter of the hoisting drum to that of the staple drum.

For example, if the diameter of the hoisting drum is twice that of the staple drum, making the diameter ratio of these drums 2, since the depth of hoist is 1200 ft., the required length of suspended chain is $\frac{1}{2} \times 1200 \div 2 = 300$ feet.

Again, to ascertain the required weight of the chain, multiply the weight of 1200 ft. of the hoisting rope by

the ratio of the diameters of the drums. In the present case, it may be assumed that the total weight hoisted at one time, including the cage, car and coal is, say 7 tons. This will require a 1⅛-in. six-strand, nineteen-wire, cast-steel hoisting rope weighing 2 lb. per ft., which makes the total weight of rope to be balanced $2 \times 1200 = 2400$ lb. The weight of chain required is, therefore, $2 \times 2400 = 4800$ lb., and since the chain is 300 ft. long, it must weigh $4800 \div 300 = 16$ lb. per foot.

It will be observed that, during the first half of each hoist, the engine is assisted in its work by the falling of the chain in the staple shaft, while during the second half of the hoist the effect of the rising chain is to retard the engine. There is thus maintained a perfect counterbalance of the effect of the transfer of the weight of the rope, in the hoisting shaft, from the ascending side to the descending side, each time a hoist is made. TIMOTHY GOLDON.

Clinton, Ind.

Qualified Mine Foremen

Letter No. 7—The actual test of a qualified mine foreman lies in his personal attributes and characteristics. For example, it goes without saying that to be fully qualified a foreman must be sober, industrious, honest and truthful in his statements both to his employers and to the men in his charge. He must have a clear understanding of matters and be possessed of a calm judgment that will enable him to settle all difficulties that may arise between the men and the company in a manner that will be satisfactory and just to both parties. In other words, he must be a capable business manager.

The qualifications of a foreman will be determined very largely by his education and experience. Whether self-educated or otherwise, the man must possess sufficient knowledge and ability to pass the examination required of qualified mine foremen, and must hold a certificate testifying that his knowledge and capability are such as to fit him for the position of foreman.

PRACTICAL QUALIFICATIONS OF MINE FOREMEN

In practice the foreman must be able to measure accurately the quantity of air circulating in the mine. His practical experience must be such as to enable him to distribute this air according to the requirements in different parts of the mine, and conduct it to the working faces in such a manner as to sweep away the gases generated in those places and make them safe and healthful for work.

A mine foreman is not qualified unless he has a full knowledge of the mining law and is able to make such further regulations as the particular conditions in the mine in his charge may require, in order to insure the health and safety of every man working in the mine.

A foreman must have a practical knowledge of all classes of mine work and be familiar with the different systems of mining that are adapted to different conditions, so that he will be able to plan the work in a manner that will be both safe and economical. He must be familiar with the different kinds of equipment and understand which type of cutting machine, haulage system and motor will give the best results.

A foreman must have a full knowledge of mine timbering and know when a working place is safe for work. In daily practice he must personally examine each working place in the mine, so that he will be familiar with its condition and able to judge of the quantity and quality of coal that can be mined in each place. In order to insure the safety of his men the foreman must give careful attention to the securing of any loose rock or slate in the rooms and on the haulage road. When the workings have been developed to such an extent that a foreman is unable to carefully inspect each working place each day, while the men are at work, he must appoint capable assistants to help him.

Finally, the qualified foreman must be a man that will coöperate with his superintendent. He must be reliable, and his experience must be such that he will be able to increase the tonnage of the mine as the demand for coal increases, provided the coal is in the ground. This will require that the foreman be a hustler and a man of good foresight who will provide for coming contingencies. In doing this, he must be able to keep the mine in good condition, operate it in compliance with the mining laws and keep his men satisfied.

Worley, Ky. OSCAR JONES.

Letter No. 8—The change suggested from the discussion of uncertified to that of "Qualified Mine Foremen" should develop many good points that will be of benefit to the coal industry.

The qualifications necessary to successful mine foremanship are not wholly such as can be determined by an examining board. A foreman, whether certified or uncertified, must possess certain qualifications that are of a subtle nature, and which can only be determined in the practical test when the man is given the job and his capability is proved by the success that results from his management of affairs.

Ten men may be able to tell how to do things, while only one of the ten is able to go ahead and do them. Ten men may know how a mine should be run, while but one of the ten will be able to run it successfully. Napoleon was a man of deeds and, like him, the qualified foreman must be a man who can perform. He must be qualified and equipped, by knowledge and experience, to execute the duties of his office.

TWO NECESSARY QUALITIES OF MINE FOREMEN

There are two qualities to be considered in deciding upon the fitness of a candidate for mine foremanship—namely, his capability to promote mine safety, and his capacity for producing the largest tonnage of coal at the least cost of operation. These qualities combined determine the relative efficiency of men for filling the office of mine foreman.

To rate a man's efficiency by his ability to produce coal at a minimum cost is to lose sight of a natural law that is as old as the hills, and which regards the fact that a man can do no efficient work under conditions that he knows are dangerous. His mind is diverted by the fear of personal harm and his work hampered by the caution he must use to avoid accidents.

The qualified foreman will recognize as one of his important duties the necessity of placing his men under safe working conditions. The qualifications of a mine foreman, as determined by a state mine examining

board, are those that relate most largely to the safe operation of a mine. The requirements of an examination that is properly conducted should determine if the candidate has the knowledge that will enable him to judge correctly whether the conditions existing in a mine are safe or unsafe for work therein.

Because the examination does not serve to determine the man's capability to produce coal economically, however, it should not be claimed that examination and certification are unnecessary requirements for mine foremanship. It must be assumed that a certified man is, at least, capable of conducting the operations of a mine safely, which is of equal importance with his ability to produce results.

One of the prime requisites of a qualified foreman is that he shall possess the qualities of will power, perseverance, patience, good judgment and a knowledge of human nature. The qualified foreman is a hustler and a live wire—wideawake to the responsibilities and duties of his office. He must have backbone that will command the respect of all with whom he comes in contact and make his ideas and suggestions worthy of consideration. He is not of a mediocre turn of mind that would fail to carry into effect his ideals and plans for economical operation in the different branches of mining. On the contrary, he will urge his ideas of improvement in methods and equipment and secure for them a fair trial.

Qualified Foremen Willing To Share Blame

I do not say that a qualified foreman never fails, but he is not the man to shift the blame onto someone else when the fault lies in his own lack of supervision. Instead of explaining that he told "John" or "Dick" to do a certain thing that the superintendent finds has not been done, he admits his own failure and promises "It shall be attended to at once," or, "It will not happen again." Shifting the blame from one man to another does not remedy a trouble, but the resolve to perform a duty at once is more satisfactory and what is wanted. It is results that count.

Some of the evidences of qualification in a mine foreman are the habit of planning today the work for tomorrow. It may not always be policy to tell a workman what he is expected to do the next day. If the work is disagreeable, it would give him the opportunity to lay off and play "sick." But, the foreman must know the day before what work must be done and provide the material necessary for its execution. A competent foreman will never start men to do a job when the necessary tools and material are not at hand.

Another evidence of qualification is the habit of not worrying or borrowing trouble. A qualified foreman never crosses a bridge until he comes to it. The worry habit is always a big handicap to a man and his work. Worry undermines the health and unfits a foreman for facing the difficulties that confront him.

Thomas, W. Va. W. H. Noone.

Scarcity of Mine Material

Letter No. 1—Much has been said, and very properly, about the scarcity of labor available in coal mining. This is more apparent in some districts and in some mines than in others that are not suffering from this cause to the same extent.

There is another matter, however, that is of equal importance, and which should be mentioned in speaking of the present difficulties that confront mine operators as a result of the conditions imposed on this country by reason of the war. I refer to the scarcity of mine material. As is well known, it is impossible to operate a coal mine without an adequate supply of mine timber, iron and wood tracking, tools and machinery, and other needed supplies.

Personally, I have never found it difficult to secure and hold good labor in mines of which I have had charge. To hold men and get them to work steadily is one of the most important things a mine foreman must consider. It is possible to do this by giving them kind, fair treatment. Our Government should take the question of shortage of labor in coal mining into consideration, before summoning young men from the mines. It does not seem right to send our boys to the front when so large a proportion of the foreign element stay at home and reap the harvest by taking the boys' places in the mine.

War-Time Need of Conserving Material

My purpose in writing, however, was to draw attention to the scarcity of mine material, which is of as much concern as the scarcity of labor, at the present time. Much of this material is difficult to obtain today, and one must often wait for weeks at a time, if, indeed, he is able then to place an order with any chance of having it filled before his supply of the needed material is entirely exhausted. On this account, every mine official gives his attention to conserving what material is now on hand, lying in and about the mines.

There should be no waste of old iron or other scrap that can be utilized for any purpose whatsoever. All of this material should be carefully collected and put where it can be found and used again when needed. Some time ago, attention was drawn to the waste of material that is common in coal mining. The discussion of this question in *Coal Age* no doubt did much good at that time, but the present need of saving material is more urgent than ever before.

Discipline Men Guilty of Waste

Every mine foreman knows that there is a large amount of timber, rails, ties and tracking thrown aside and covered up in the waste, much of which could be used again if taken care of at the time. The present high cost of all mine supplies makes it more than ever possible to recover this material at some expense. In many mines, it will pay the company to keep one man busy going around in the old abandoned places and hunting up good timber, rails, ties and other material that has long been thrown aside and forgotten. The time will come when this material will be needed and if it cannot be procured promptly the mine may be compelled to shut down for a time.

Much may be accomplished in the effort to lessen the waste of material by disciplining men who persist in throwing timber, rails, etc., back in the gob instead of putting it where it will be seen and used again. It may pay, at times, to offer a small bonus for the careful use of material by employees. I hope this matter will receive the attention that it deserves.

Chambersville, Penn. John Buggy.

Inquiries of General Interest

Wheelbase of Mine Cars

I want to ask if there is any rule for determining the proper wheelbase of a mine car, other than that commonly used by car manufacturers, who claim that the wheelbase should be about one-third of the inside length of the car.

This question arose, recently, when the manager of a mine, in designing a new mine car, proposed to make the inside length of the car 9 ft. The car was to have a capacity of 2½ tons of coal. The track gage was 42 in. and the wheelbase was to be 36 inches.

When the plan was presented to the manufacturer, however, objection was made that a wheelbase of 36 in. would be too long. I would like to ask, What rule should govern in determining the wheelbase of a mine car, assuming that the room turnouts and other curves are in conformity with the best mining practice?

———, Penn. MINING ENGINEER.

The rule of making the wheelbase of mine cars about one-third of the inside length of the car is one that has been used by manufacturers for many years. It is believed to give a better balance of the forces acting in the movement of the loaded car, both on a level track or ascending or descending a grade.

It is well known that a car having a short wheelbase is more readily moved on a sharp curve than one having a longer base, because the forward outer wheel cuts the rail at a lesser angle than when the wheelbase is longer. However, the question of length of wheelbase is one that relates more directly to the proper balancing of the car. If the wheelbase is too short, the car has a tendency to rock, while if the wheelbase is too long, not only would the car be more difficult to handle, as it would not swing as readily to the curvature of the track, but if derailed, the work of placing it again on the track would be more difficult. For these reasons, the one-third rule of manufacturers gives the best satisfaction, as the balance of the car is more nearly what is desired.

Clearing a Heading of Gas

When firebossing in Monongah No. 6, some time ago, I found gas accumulated at the face of the fourth and fifth north headings, which had to be removed. To accomplish this, I extended a line of brattice from the last breakthrough to within a short distance of the face. As this did not seem to clear away the gas, I went back about 90 ft. and hung a canvas across the return airway, with the idea that this would increase the pressure and move the gas.

We had some argument on this point, not long since, at one of our meetings in the Fairmont district, as to what effect, if any, the hanging of a canvas on the return airway would have on the water gage and the fan. The idea, as far as moving the gas was concerned, seemed good. We will be glad to have *Coal Age* and its readers say what they think, as the opinions expressed did not agree and we came to no conclusion.

Wevaco, W. Va. MINE FOREMAN.

Without knowing more precisely the position of the canvas hung 90 ft. back on the return airway and its relation to the air current and the body of gas to be moved, it is difficult to understand how the canvas hung "across the return airway" would assist the movement of the gas, as claimed by this correspondent.

Assuming there is no other passage open for the air to take, obstructing the return airway by canvas, in this manner, would arrest the circulation in that pair of headings. The gas accumulated at the face of, say the 4N, assuming that entry is the intake, must pass out by the 5N, which would then be the return for that section. To hang a canvas in its path would hinder its escape.

If the canvas hung in the return helped to move the gas more quickly, it is clear there was some other way of escape than this return. Any obstruction of an air course increases the pressure and the water gage and decreases the quantity of air in circulation, for the same power. The water gage on the fan drift would be increased slightly, and the fan would run a trifle faster.

To Calculate the Specific Gravity of Gaseous Mixtures

Kindly explain the method of calculating the specific gravity of firedamp at its lower and higher explosive limits and its maximum explosive point.

Ladysmith, B. C., Canada. WALTER JOYCE.

A firedamp mixture of marsh gas and air, at its lower explosive limit, consists of 1 volume of the gas and 13 volumes of air. Taking the density of air as unity, that of marsh gas is 0.559, and the relative weights of air and gas in this mixture are then:

		Volume	Density	Weight
Lower Explosive Limit	Air	13	× 1 =	13
	Gas	1	× 0.559 =	0.559
	Firedamp	14		13.559

The density of this firedamp mixture is, therefore, 13.559 ÷ 14 = 0.9685.

At its most explosive point, the mixture consists of 1 volume of the gas to **9.57 volumes of air.**

Maximum Explosive Point	Air	9.57	× 1 =	9.57
	Gas	1	× 0.559 =	0.559
	Firedamp	10.57		10.129

Density: 10.129 ÷ 10.57 = 0.9582

At the higher explosive limit the proportion of gas to air is 1 : 5:

Higher Explosive Limit	Air	5	× 1 =	5
	Gas	1	× 0.559 =	0.559
	Firedamp	6		5.559

Examination Questions

First Examination in the State of Washington, Under the New Law

(Answered by Request)

Ques.—Supposing that a fire occurred at the inlet to a mine, what would be your first consideration, and how would you try to prevent the smoke from going to the workmen?

Ans.—Without knowing the exact situation, this question can only be answered in a general way, as very much will depend on the headway gained by the fire and the surrounding arrangements and conditions. In general, it may be said that if the mine is generating no gas, the main-intake current should be short-circuited at the nearest point that can be reached inby from the fire. At the same time, the ventilating fan should be shut down and the necessary steps taken to get water on the fire by such means as are available. At the first discovery of the fire, word should be sent into the mine and the men withdrawn by the most available passage.

In a mine generating gas, safety demands that there shall be more than one intake airway and arrangements provided by which the intake current can be shifted from one to the other of these airways; so that, in case of fire occurring in one of them, the air can be cut off from the fire, while the circulation is still maintained in the mine. In that case, this having been done, and the men having been warned of their danger and withdrawn by a safe avenue of escape, steps should be taken to get water on the fire as quickly as possible.

Ques.—In a mine in which spontaneous combustion occurs, how would you work it to obtain the best results, safety and cost of operation being both considered?

Ans.—Every precaution should be taken to load out all the fine coal and slack produced in mining. Strict regulations should be enforced to prevent the fine coal from being thrown into the gob. The mine should be well ventilated, especially void or abandoned places, the latter being tightly sealed when that is not possible. Pillars between rooms should be drawn back as quickly as the rooms reach the limit. Much will depend on the selection of that method of working which is best adapted to the conditions existing in the seam, and which will enable the coal to be extracted most completely and rapidly, while maintaining as small an open area as practicable. It is important to concentrate the work and keep the mine in good condition and free from dust. All roads and passageways should be cleaned regularly.

Ques.—In a timbered airway, the collars measure 6 ft. 6 in. between notches, and the spread of the legs is 9 ft. 6 in. at the bottom, the clear height from top of rail to underside of collar being 6 ft. If the anemometer registers a reading of 520 r.p.m., what is the quantity of air passing per minute?

Ans.—The average width of passage between the legs is half the sum of the top and bottom widths, or 8 ft.; and the area of passage between the timbers is, therefore, $6 \times 8 = 48$ sq.ft. Each revolution of the anemometer corresponds to 1 ft. of air travel, approximately, and, assuming the area within the timbers approaches the effective area of the airway, the quantity of air passing is $48 \times 520 = 24{,}960$ cu.ft. per minute.

Ques.—A mine employs 150 men—45 men on the 2-E level, 60 men on the 2-W level, 25 men on the 3-E and 20 men on the 3-W. How much air will it take to ventilate this mine properly and according to the mine law, and what should be the quantity passing on each level?

Ans.—The Coal-Mining Laws of the State of Washington require the circulation of 100 cu.ft. of air per minute, for each man, and 500 cu.ft. per min. for each mule or horse employed in the mine. Hence, to answer this question on a practical basis, it is necessary to estimate on, say six mules for hauling the coal mined, unless some form of mechanical haulage is employed.

The quantity of air required will then be:

Mechanical haulage, $150 \times 100 = 15{,}000$ cu.ft. per min.
Mule haulage, $15{,}000 + 6 \times 500 = 18{,}000$ cu.ft. per min.

The distribution of the air between these levels would be as follows:

	Mule Haulage	Mechanical Haulage
2-E level	5,400	4,500 cu.ft. per min.
2-W level	7,200	6,000 cu.ft. per min.
3-E level	3,000	2,500 cu.ft. per min.
3-W level	2,400	2,000 cu.ft. per min.
Totals.....	18,000	15,000 cu.ft. per min.

Ques.—How many cubic feet of air would be required to dilute and render harmless 500 cu.ft. of marsh gas?

Ans.—The answer to this question will depend on the conditions of mining and the quality and nature of the coal mined, assuming the marsh gas is located in a mine generating gas. When mining anthracite and some hard bituminous coals, 2 per cent. of gas may be harmless, with ordinary care; but when the coal is highly inflammable and friable, causing much fine dust in mining, more than 1 per cent. of gas is unsafe.

Hence, in the former case, the total volume of gas and air would be $500 \div 0.02 = 25{,}000$ cu.ft., and the required volume of air to be added to render harmless 500 cu.ft. of gas is $25{,}000 - 500 = 24{,}500$ cu.ft.

In the second instance, the total of volume of gas and air is $500 \div 0.01 = 50{,}000$ cu.ft., and the required volume of air to be added $50{,}000 - 500 = 49{,}500$ cu.ft.

Ques.—(a) What is a permissible explosive? (b) When is such an explosive not "permissible"?

Ans.—(a) A "permissible explosive" is one that has passed the several tests required by the Federal Bureau of Mines and is listed as such in the publications of the bureau.

(b) An otherwise permissible explosive ceases to be such when used under conditions different from those specified by the bureau in its circulars.

Coal and Coke News

For the Busy Reader

More than 80 per cent. of the coal needed in the Northwest this winter has been shipped, the Railroad War Board announced recently.

* * *

Mines in the Fairmont region of West Virginia seem to be getting the usual poor car service. In order to hold their men, some of the companies are keeping them at work cleaning up around the plants.

* * *

A statement showing that in the 18 years from 1899 to 1916, inclusive, Pennsylvania produced 2,281,924,184 of the 4,049,573,236 tons of bituminous coal mined in the United States, was issued recently by James E. Roderick, state chief of mines.

* * *

The Fuel Administration has taken steps to modify the arrangement under which coal shipments to the Northwest have received preference, and will divert anthracite and bituminous coal to supply munitions plants and private consumers along the Atlantic seaboard.

* * *

Fuel Administrator Garfield has expressed himself quite forcibly anent the seizure of coal by the mayors of several Ohio cities. "This municipal robbery," Mr. Garfield stated, "not only has disarranged shipping, but has caused hardships in other states and in other Ohio towns."

* * *

The shortage of domestic coal in certain cities of the United States seems to be getting acute, and the dealers are complaining that they can get no coal. Among the cities affected are Suffolk, Va.; Washington, N. C.; St. Louis, Mo.; Rochester, N. Y.; Syracuse, N. Y.; Chicago, Ill.; Pittsburgh, Penn., and many lesser places.

* * *

Enough information has been collected by the Federal Trade Commission and through other sources to furnish conclusive evidence that an increase in the price of coal at the mines is necessary. There is reason to believe that a general readjustment of prices is in order. An announcement of new prices is expected shortly.

* * *

Several thousand miners were thrown idle and a number of mines closed down in central Pennsylvania, particularly in Cambria County, by the priority order of cars to coke producers. At Palton, Hastings, Mosscreek and Portage, almost all the mines had no cars and suspended operation. At Palton alone, seven mines and 1800 miners were thrown idle.

* * *

Directors of the National Coal Association, representing bituminous operators with a yearly output of 250,000,000 tons, met in Washington Thursday to frame a comprehensive program for dealing with the threatened coal shortage. The association will consider for submission to Dr. Garfield a general program calling for the conservation of coal in all industries and in domestic consumption.

* * *

"Of the world's coal mined, 1,235,000,000 tons is wasted in heat radiation and other losses," was the statement recently made by L. C. Harvey during the course of a talk in London on "Fuel Economy." In 1910 the coal mined in the world was about 1,300,000,000 tons, and according to Mr. Harvey it was improbable that anything like 5 per cent. was ever turned into actual useful work.

* * *

A condition in the new wage agreement that worries the big operators is the one which states that the increase will not apply on contract coal. This means that those operators who have practically all their coal under contract will not get the 45c. increase and still will be expected to grant wage increases of approximately the same amount. These operators state that their contracts are made on a profit margin which will not permit an increase of 45c. a ton in the mining rate.

PENNSYLVANIA

Anthracite

Tamaqua—Power for the reclaimed Kaska William and Shoo Fly mines of the Lehigh Coal and Navigation Co. between here and Hazleton, will be supplied by the Harwood Electric Co. The mines were abandoned about 30 years ago as being worked out, but preparations are being made to resume operations on an extensive scale. The mines have been allowed to fill with water, which is now being pumped out.

Shamokin—One of the worst rain, hail and snow storms in the history of the region struck the town on Oct. 30 and continued for about 36 hours. A majority of the coal-mining operations were flooded so that work was impossible. Railroad traffic was greatly interrupted owing to washouts.

Minersville—The newest coal breaker in the Heckscherville Valley is now in operation, taking the place of the one destroyed by fire in June. This means that the preparation of coal produced by the company is once more restored to its own property. During the time the breaker was being built the coal was sent to the Pine Knot shaft of the Philadelphia & Reading Coal and Iron Company.

Plymouth—Gaylord colliery, which many supposed could not be operated for the balance of November on account of the cave, has been placed in operation. A large number of gondolas were in the empty switch above the breaker, and they were loaded and run down to a point as near the cave as was safe. In the meantime several gondolas loaded with ashes were brought to the place by the Delaware & Hudson Co. and dumped into the cavity. This method of filling the cave will be continued, and the largest portion of the colliery can be operated.

Beaver Brook—The C. M. Dodson Coal Co. is erecting a clubhouse for the use of its men and boys. Reading rooms and pool tables will be installed as a means of keeping the young men away from the saloons and other influences.

Port Carbon—The old Salem Hill culm banks, which have been untouched since they were dumped before the Civil War, are being shipped away in their entirety to New York City, where their contents, rich in small sizes of coal, are being used for steam purposes by means of a blower system. About 3000 tons are being shipped every month. The same syndicate will also remove a culm bank at Young's Landing.

Punxsutawney—Coal operators in this vicinity are much dissatisfied with the conditions attached to the Government's increase of 45c. a ton in the price of coal. The small operators say the advance is not sufficient to enable them to do business at a profit, while the large operators say that the strings attached to the increase make their situation worse than it was before.

WEST VIRGINIA

Bluefield—The tipple of the Burnwell Coal and Coke Co., at Sprigg, was destroyed by fire recently. The fire worked a total damage of $60,000, fully covered by insurance.

Clarksburg—The Two Lick coal-mining plant of the Consolidation Coal Co., south of this city, was forced to suspend operations recently as the result of the blowing of a crosshead of an engine in the power house. The damage was slight, and about 100 men were temporarily idle.

Fairmont—The car supply last week was the best experienced in the region in seven or eight weeks, and coal operators are greatly encouraged. It seems as if the promises made by President Willard, of the Baltimore & Ohio R.R., that the end of the week would see a distinct improvement in the car supply, are being fulfilled.

TENNESSEE

Chattanooga—The Durham Coal and Iron Co. has filed suit against the Cincinnati, New Orleans & Texas Pacific R.R. here for $100,000 as damages, alleging that sparks from an engine of the defendant set fire to its plant and resulted in a loss to the amount named. The fire occurred on May 21, 1916.

Knoxville—The City Commission, which is purchasing coal on the market for the schools and city institutions, finds the cost of the supply, delivered to the various bins, $5.17 a ton. The commission proposes to obtain all the coal possible and to let city employees have it at cost.

KENTUCKY

Sergent—The Whitley-Elkhorn Coal Co. made its first shipments of coal on Monday, Oct. 29. This company is also opening the No. 4 coal. At present the Elkhorn vein is being developed.

Cleaton—The tipple of the Holt Coal Co. near here was destroyed by fire, with a loss of $15,000, partly covered by insurance. One hundred and eighty men are out of employment. Incendiarism is charged. Workmen succeeded in extinguishing one fire, but a second soon afterward broke out at the opposite end of the structure.

Louisville—Battery A, of the 327th regiment, encamped at Camp Taylor here, is composed almost entirely of Springfield and Sangamon County miners. The 189 members of the battery compose almost an entire local of the United Mine Workers of America.

OHIO

Crooksville—A number of the small wagon mines in the Crooksville field have practically suspended operations on account of inability of the operators to secure freight cars.

Bridgeport—There is no coal shortage in the eastern Ohio district, all the mines operating to their highest capacity, according to William Hoy, president of the miners' organization of this district. Great trouble is experienced, however, in obtaining cars.

Lima—The seizure of coal from railroad cars near this city has evidently aroused the Fuel Administration, which intimates that the Ohio fuel administration will take prompt action to put a stop to what Garfield terms "wholesale robbery."

ILLINOIS

DuQuoin—The new town of Dowell, Ill., in Jackson County, 5 miles south of DuQuoin, on the main line of the Illinois Central R.R., is opening up. The Kathleen mine of the Union Colliery Co., of St. Louis, is being sunk here and will be the largest bituminous mine in the state.

Edwardsville—Two local mines have shut down because they do not know whether they can charge the advance of 45c. a ton at the pit to local consumers. The two other mines selling to foreign trade are still operating. The owners of the closed mines are considering loading coal into cars, as if for shipment, and selling it to consumers from the cars at the advance.

Staunton—Some of the largest mines in this section may have to close down for lack of water. The Staunton reservoir is practically empty, and the operators have been notified that they must not draw any more water from it. Plans have been made to obtain a temporary supply in tank cars from Edwardsville, but this may prove inadequate. Mines Nos. 2, 7 and 14 of the Consolidated Coal Co., and the mine of the Kerens-Donnewald Coal Co., are affected.

Pana—Operators here are undecided whether the 45c. increase applies to sales at the mouth of the mine to consumers. Manager Warren Penwell, of the Penwell Mining Co., said he would make no announcement until he had further information. In fear that the price will be raised, however, every available vehicle has been pressed into service for local delivery of coal.

OKLAHOMA

McAlester—The State Vocational School Board of Oklahoma is planning to establish schools for coal miners here and at Wilburton. The vocation board was created by act of the Oklahoma Legislature to work in conjunction with the Federal Board, which will plan and approve the work to be done in the state. The school will be for persons under 21 and over 16 years of age, and instruction given will be without charge to the pupils.

Foreign News

London, England—After 14 years of preliminary work, costing more than $2,000,000, coal-mining operations are about to begin on a deposit of coal at Keresley. The output is expected to reach more than 1,000,000 tons a year and to last 80 years. Four seams have been located.

Barra do Pirahy, Brazil—The committee appointed to experiment with production of native fuel has obtained excellent results from use of native peat which in pulverized form can readily be used with engines and on locomotives. A strong syndicate has been formed by Brazilian capital to exploit coal mines.

Copenhagen, Denmark—According to the "Vorwaerts," of Berlin, many residents of that city are shivering in unheated homes, owing to their inability to obtain even the scanty allowance of ¼ ton of coal per room. Buyers of coal are compelled to stand in line all day to obtain a few scoopsful, which they have to carry home themselves.

The Hague, Netherlands—Hollanders are using homemade fireless cookers to save the coal supply. In many towns the bakers are concentrating in a few central establishments. Public kitchens seem likely to become a general institution this winter, not alone for the poor, but the well-to-do as well. Railroad traffic is to be further cut down. Public lighting has already been reduced and many factories have shut down for lack of fuel.

Ottawa, Ont.—An order-in-council has been passed by the Dominion Government authorizing regulations issued by the fuel controller for Canada respecting the importation and sale of coal, which go into effect on Nov. 1. Provision is made for the licensing of all importers and dealers now doing business in Canada and that may hereafter desire to do so. Under the regulations every mine operator in Canada must enter into an agreement with the fuel controller, fixing the maximum price per ton for the output of his mine. In case of emergency, the fuel controller is empowered to compel those who have supplies to share them with neighbors.

Personals

J. O. Hanna, formerly chief sales agent for the several mines operated by the North American Collieries, Ltd., Alberta, Canada, has resigned his position and accepted one as general manager of the mines operated by the Federal Coals, Ltd., Lethbridge, Alberta, Canada.

W. A. Cortright, Jr., formerly connected with the Cortright Coal Co., Philadelphia, Penn., has been appointed ensign in the United States Naval Reserve, and Edgar M. Cortright, brother of the president of the Cortright company, and connected with the Weston-Dodson interests, is serving as second lieutenant of artillery in the National Army.

Carl Scholz, of Chicago, Ill., who is the mining engineer of the Chicago, Burlington & Quincy R.R., and who is opening a shaft mine that is known to be the last word in mining construction, has received notice of his appointment on a board of consulting engineers on coal conservation. He receives this appointment at the hands of the Bureau of Mines, an organization with which he is in close touch, for it was with the engineers of the Bureau of Mines that he toured the coal mines of Europe to obtain information by which our practice in the United States might be in some ways improved, especially in regard to the prevention of explosions and the conservation of mineral. L. P. Breckenridge, of the Sheffield Scientific School, is chairman of the board.

Obituary

Alex Richards, aged 48, one of the best-known mine operators of southwestern Virginia, died at his home near Esserville, in Wise County, Va., Oct. 31, after a brief illness. He was interested in five mines in the Virginia coal fields. His widow and five children survive him. He was well known to the coal trade throughout the country.

William Donald, of Hazleton Heights, Penn., one of the most prominent mining men of the Lehigh region, died at his home on Nov. 2, aged 70. He was a mine superintendent at the Stockton collieries for 36 years, working under the Coxe regime and also under the Lehigh Valley Coal Co. Two daughters and three sons survive him.

D. C. Roberts, aged 50, a mine operator of western Kentucky, died at his home near Marion Ky., after an extended illness. Nearly two years ago Mr. Roberts sustained a stroke of paralysis, from which he never thoroughly recovered. For 20 years he had been a coal operator in the western Kentucky field, having been connected with a number of mines. His widow and several sons survive him.

Marshall Sangralet, of Belleville, Ill., 60 years old, superintendent of the so-called "Nigger Hollow" mines of the St. Louis & O'Fallon Coal Co. died at a hospital here on Oct. 29 from injuries received the day before, when he was caught between a loaded pit car and a storage-battery locomotive in the mine. He had been superintendent for several years. He was making an inspection when the accident occurred. He is survived by a widow and a daughter.

Recent Coal & Coke Patents

Conveyor. C. F. Leatherbee, Newton, Mass. 1,241,525. Oct. 2, 1917. Filed Apr. 4, 1910. Serial No. 553,330.

Coal Shield. W. E. Wood, Rochester, N. Y., 1,239,549. Sept. 11, 1917. Filed Mar. 24, 1915. Serial No. 16,822.

Coal-Chute Door. C. F. Stiglitz, Louisville, Ky., 1,242,067. Oct. 2, 1917. Filed Apr. 23, 1915. Serial No. 23,280.

Mine Door. C. W. Carman, Newburg, W. Va., 1,240,541. Sept. 18, 1917. Filed Feb. 19, 1917. Serial No. 149,635.

Automatic Mine Door. J. C. Allan, Riddlesburg, Penn., 1,242,411. Oct. 9, 1917. Filed Aug. 15, 1916. Serial No. 115,052.

Automatic Stoker. E. W. Sprague, Allentown, Penn., 1,240,614. Sept. 18, 1917. Filed Jan. 19, 1916. Serial No. 72,879.

Underfeed Stoker. E. J. Hart, Philadelphia, Penn., 1,240,969. Sept. 25, 1917. Filed Nov. 23, 1915. Serial No. 62,944.

Acetylene Miner's Lamp. A. F. Adams, Madrid, Iowa, 1.238,729. Sept. 4, 1917. Filed Sept. 6, 1916. Serial No. 118,746.

Gas-Collecting Apparatus for Coke Ovens. H. P. Scheel, Tenino, Wash., 1,240,494. Sept. 18, 1917. Filed Jan. 17, 1917. Serial No. 142,924.

Coaling Apparatus. W. F. Hunt, New Brighton, Staten Island, N. Y., 1,240,215. Sept. 18, 1917. Filed May 15, 1914. Serial No. 838,624.

Furnace. A. P. Strong, assignor to Green Engineering Co., East Chicago, Ind., 1,242,263. Oct. 9, 1917. Filed Mar. 6, 1917. Serial No. 152,635.

Fuel Economizer. E. H. Foster, assignor to Power Specialty Co., New York, N. Y., 1,239,377. Sept. 4, 1917. Filed Feb. 17, 1916. Serial No. 78,799.

Distillation of Coal and Other Carbonaceous Materials. H. G. Stone, Chicago, Ill., 1,242,261. Oct. 9, 1917. Filed Apr. 29, 1915. Serial No. 24,623.

Automatic Stoker Furnace. E. Fitts, assignor to Detroit Stoker Co., Detroit, Mich., 1,242,336. Oct. 9, 1917. Filed Oct. 15, 1915. Serial No. 55,950.

Publications Received

"Coking of Illinois Coals." By F. K. Ovitz. Department of the Interior, Bureau of Mines. Bulletin 138. Illustrated, 71 pp., 5¾ x 9 in.

"The Value of Peat Fuel for the Generation of Steam." By John Blizard, B.Sc. Canada Department of Mines, Mines Branch. Bulletin No. 17. Illustrated, 42 pp., 6½ x 9¾ in.

"The Seasoning of Wood." By Harold S. Betts, M. E., in charge, Office of Industrial Relations. United States Department of Agriculture. Bulletin No. 552. Illustrated, 28 pp., 5¾ x 9 in.

"The Utilization of Pyrite Occurring in Illinois Bituminous Coal." By E. A. Holbrook. Engineering Experiment Station, University of Illinois. Circular No. 5. Illustrated, 46 pp., 6 x 9 in.

"The Mining Industry in the Territory of Alaska During the Calendar Year 1915." By Sumner S. Smith. United States Mine Inspector for Alaska. Department of the Interior, Bureau of Mines. Bulletin 142. Unillustrated, 64 pp., 5¾ x 9 in.

Trade Catalogs

Tipple at Powhatan in Pocahontas Field. Link-Belt Co., Chicago, Ill. Book No. 322. Pp. 16; 6 x 9 in.; illustrated.

Shovels, Picks, etc. The Wood Shovel and Tool Co., Piqua, Ohio. Spanish catalog. Pp. 58; 8 x 11 in.; illustrated.

Safety Panels and Cabinets. Crouse-Hinds Co., Syracuse, N. Y. Bulletin No. 1D. Pp. 12; 8 x 11 in.; illustrated.

Snow Oil Pumps. Worthington Pump and Machinery Corporation, 115 Broadway, New York. Bulletin No. S-112. Pp. 24; 6 x 9 in.; illustrated.

Pot Valve Pressure Pumps. Worthington Pump and Machinery Corporation, 115 Broadway, New York. Bulletin W-500. Pp. 48; 6 x 9 in.; illustrated.

Sullivan Angle-Compound Power-Driven Air Compressors. Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill. Bulletin 75C. Pp. 32; 6 x 9 in.; illustrated.

Sullivan Tandem Compound Corliss Air Compressors, Class WC. Sullivan Machinery Co., 122 S. Michigan Ave., Chicago, Ill. Bulletin 75F. Pp. 32; 6 x 9 in.; illustrated.

The Wright Wire Co., Worcester, Mass., has issued a pamphlet containing photographs of the officers of the company and the salesmen of the different branches; also views of the various mechanical departments. A brief history of the wire industry is included and the different products made by the concern are shown.

Industrial News

Corydon, Ky.—The Corydon Coal Co. has announced an increase in its capitalization from $30,000 to $70,000, to provide for expansion.

Northfork, W. Va.—The Keystone Coal and Coke Co. is planning for the early erection of a large new steel tipple at its plant to provide for increased capacity.

Middlesboro, Ky.—The East Point Coal Co., incorporated by J. L. Manrin, F. E. Hess and W. E. Cabell, of Middlesboro, has located an operation in Stony Fork Hollow.

Cumbol, Penn.—The Dick Construction Co. has received the contract for a big stripping on the Hickory tract of the Philadelphia & Reading Coal and Iron Co. Work is to be started at once.

Henderson, Ky.—The City Council has contracted with the Middle West Coal Co., of Cincinnati, for at least a year's supply of coal for the municipal gas plant. This will amount to about 3000 tons.

Baltimore, Md.—The Haffa & Sons Coal Co. has filed an amendment to its charter here. The firm name has been changed to the Georges Creek Coal Mining Co., and the capital stock increased to $100,000.

Bluefield, W. Va.—The Top Mining Co. has been organized by J. P. Crockett, Matthew Cummins and others, for the purpose of operating mines in this section. The company is capitalized at $50,000.

Seco, Ky.—The Elk Horn Byproducts Coal Co. is putting in a new coal operation immediately above here on the Noah Bentley coal lands and will be in readiness to begin shipping coal within 30 days.

Nelsonville, Ohio—The Highland Coal Co. has been incorporated with a capital of $10,000 to mine and sell coal. The incorporators are J. B. Davis, Frank Power, Harry Power, Eva I. Davis and Clarence Power.

Greensburg, Penn.—The Hunker Steam Coal Co., headed by Greensburg men, has been chartered for $50,000 and will begin developments at once on a new tract of coal recently purchased in Westmoreland County.

Whitesburg, Ky.—The Black Diamond Coal Co., with a development on the Long Fork Branch of the Baltimore & Ohio on Beaver Creek, has increased its capital from $15,000 to $90,000 and will double its capacity.

Cleveland, Ohio—The Grant Coal Co. has been incorporated with a capital of $100,000 to mine and sell coal. The incorporators are: Alton H. Bemis, W. E. Malm, P. W. Seagrave, John A. Bommhardt and A. A. Bemis.

Rock Springs, Wyo.—The Rock Springs Fuel Co. has been incorporated by August Martelle, Soren Larsen, C. E. Johnson, C.

M. Goodman and D. A. Reavill with a capital of $75,000, to develop fuel resources near this city.

Baltimore, Md.—The incorporation is announced of the Shade Run Coal Co., Grantsville, Garrett County, Md. The capital is $50,000 and the incorporators named are P. E. Finzel, J. A. Taylor and E. M. Saunders.

Van Wert, Ohio—The C. D. & K. Coal Co. has been incorporated with a capital of $40,000 to mine and sell coal. The incorporators are Perry Coppess, Ella D. Coppess, David J. Davies, William Klein and Miriam J. Davies.

Pittsburgh, Penn.—The American Coal, Iron and Coke Co. has been incorporated with a capital of $100,000, to engage in a general mining business. The incorporators are C. N. Brady, Washington, and Will Atkinson, Pittsburgh.

Hellier, Ky.—The Greenough Coal and Coke Co. here will construct a power house and make other improvements, necessitating an outlay of thousands of dollars. A large increase in output is planned for the first of the new year.

New Philadelphia, Ohio—The Staffstead Coal Co. has been incorporated with a capital of $8000 to mine and sell coal. The incorporators are John C. Kyte, Lorin Beans, P. S. Olmstead, Homer I. N. Stafford and W. H. Haskins.

Washington, D. C.—The next move by the United States to help Italy in her critical hour will be to divert quantities of coal supplies and food intended for other destinations to the 25 ships already turned over to the Italian government.

Chicago, Ill.—Deliveries of coal to Chicago consumers are being limited to a week's supply, through a ruling of the city committee of the fuel administration. This rule is expected to remain in force until the serious shortage is dealt with.

Hudson, N. Y.—The Knickerbocker Portland Co. has awarded a contract for the erection of a new reinforced-concrete coal trestle, 20 ft. high and 300 ft. long, at its plant. The Turner Construction Co., 242 Madison Ave., New York, is the contractor.

Lynchburg, Va.—The Banner Fork Coal Corporation has been incorporated with a capital of $1,000,000 to develop coal lands in various sections of Virginia. S. D. Ferguson, Roanoke, is president; and G. E. Vaughan, Lynchburg, is secretary-treasurer.

Diamond, W. Va.—The Witcher Creek Coal Co. has been incorporated with a capital of $10,000 to operate for the mining of coal. The incorporators are H. D. Shadle, Hugh Rollin, J. W. Webb, Harold B. Shadle and P. H. Murphy, all of Charleston.

Kangley, Wash.—The Kangley Coal and Clay Co. has been formed by J. W. A. Nichols and A. Ohlson, to work a coal bed here, and active development work will be started at once. The company's headquarters are at 323 Provident Building, Tacoma, Wash.

Chicago, Ill.—Subscriptions to the second Liberty Loan by employees of the Link-Belt Co., and by the company itself, amounted to $269,000, divided as follows: Indianapolis plants, $104,300; Philadelphia plant, $71,300; Chicago plant, $61,100; Link-Belt Co., $32,300.

Rochester, N. Y.—The Jenkins & Macy Co. has awarded a contract for the construction of a new coal pocket, about 35 x 110-ft., at its plant in Childs St., to cost about $12,000. Frank J. Gardner, 298 Bernard St., Rochester, has the contract for erection.

Edwardsville, Ill.—Two local mines here have suspended operations, the operators saying that they were unable to sell coal on account of the failure to get an official price to charge consumers. The two other mines operating here are shipping their coal out of the city.

Wheeling, W. Va.—The Elmgrove Mining Co. has acquired about 8000 acres of coal lands in Ohio County formerly held by the Pittsburgh Vein Coal Co., for a consideration of about $270,000. The company is planning for a bond issue for this amount to cover the purchase.

Greensburg, Penn.—The Roaring Run Mining Co. has purchased the entire holding of the Central Coal and Coke Co., consisting of about 3000 acres of coal land in Bell and Washington Townships, Westmoreland County. The consideration was in the neighborhood of $200,000.

Pittsburgh, Penn.—The Central Coal and Coke Co. has disposed of its entire holdings in Bell and Washington Townships, including about 1427 acres of coal lands in the former and 1687 acres in the latter, to the Roaring Run Mining Co., for a consideration of about $200,000.

St. Louis, Mo.—A new steel plant, to be known as the Tri-Cities Iron Co., is to be erected at Madison, Ill., in the St. Louis industrial district, at a cost of $1,000,000. Capitalists of Gary, Ind., and Pittsburgh, Penn., are said to be interested. A tract of 8½ acres will be occupied.

Columbus, Ohio—Numerous reports of the confiscation of coal by the authorities in Ohio cities and towns continue to come to the state, indicating that the need for fuel is such that there is a disposition to ignore the efforts of state and Federal authorities to distribute coal in a broad way.

Birmingham, Ala.—It is reported that the Gulf State Steel Co. has purchased the properties of the Sayre Mining and Manufacturing Co., near Birmingham, including a mine on the Mary Lee seam, 150 coke ovens and a mining camp. The property is now being operated by the Sloss-Sheffield Steel and Iron Co.

Connellsville, Penn.—The sale of 350 acres of coal land near Point Marion, by Cyrus Echard and the Sherricks of this city, to the American Manganese Co. interests was reported recently. The purchase price was $1000 an acre. The tract is located on the Monongahela River, on a spur of the Baltimore & Ohio R.R.

Connellsville, Penn.—The property of the Rice-Wilkins Coal Co., near White Bridge, Indian Creek Valley, has been sold to the Indian Creek Coal and Coke Co., otherwise the Mellon-Zimmerman interests. The holdings include about 100 acres of coal lands and the mine equipment. It is said that the output will be largely increased.

Louisville, Ky.—A coal-mining company which will sell its output at retail is the Mountain Gem Coal Co., which has been incorporated in Louisville with capital stock of $10,000. Mines in eastern Kentucky are proposed. The incorporators are: C. T. Meredith and L. N. Birk, of Louisville, and E. L. Ruesch, of East Bernstadt, Kentucky.

Knoxville, Tenn.—A concrete road to connect with the Wise County (Va.) roads is planned by the United States Coal and Coke Co., building the new mining town at Lynch, Ky. Five miles of construction will be required and the company will ask the county authorities of both Harlan County, Kentucky, and Wise County, to make what contributions they will.

Ashland, Ky.—The Edgemont Coal Co. has been incorporated to operate mines at Minnie, on the left fork of Beaver Creek, Floyd County, Ky. The Baltimore & Ohio R.R. runs through the property. Among those interested in the project are: T. A. Fields, president, and A. W. Humphrey, of Ashland, Ky. Thomas B. Powell, of Ashland, is construction engineer.

St. Marys Falls Canal, Mich.—According to Government statistics, Westbound shipments of anthracite coal through the canals at Sault Ste. Marie, Michigan and Ontario for the month of October amounted to 357,639 short tons. During the same period the westbound shipments of bituminous coal amounted to 2,586,849 short tons, making a total for both coals of 2,944,488 short tons.

Connellsville, Penn.—Capitalists of Uniontown and Connellsville have organized the Splint Coal and Coke Co., with a capital of $500,000. They have purchased 500 acres of coal land in Upshur County, West Virginia, and will begin development at once. A store, 25 miners' houses and power house are under construction at present. The new mines are on the line of the Coal and Coke Railway.

Birmingham, Ala.—The Supreme Mining Co., recently incorporated, is developing a drift and a shaft mine near Townley, Walker County, on the Frisco System, and a spur is now being constructed to the new openings from Townley. The new developments are on the Jagger seam and the shaft will be driven approximately 100 ft. to reach the coal. The plant and equipment will be modern and an ultimate output of 1000 tons per day is anticipated.

Toledo, Ohio—Records of loadings at the Toledo docks of the Toledo and Ohio Central for the week ended Nov. 2 shows that 73,000 tons were handled, as compared with 62,000 tons the previous week. The total handled by these docks since the opening of navigation is 2,013,500 tons. The Hocking Valley docks for the same week loaded 124,000 tons, as compared with 134,000 tons the previous week, and a total of 4,124,191 tons since the opening of navigation.

Knoxville, Tenn.—Each of the 32 mines in the Tennessee-Kentucky field affected by the Fuel Administration order to ship to Michigan points on Oct. 29 carried out its instructions, according to reports made here. By that night a total of 40,000 tons was on its way northward. It is feared that shipment of these cars off the lines of the Louisville & Nashville and the Southern will result in reduction of the supply before they are returned to the shipping points.

Hazard, Ky.—N. J. Urquhart and R. R. Rugheimer have perfected a loading machine designed to load coal from wagons into railroad cars. The operation is performed in one minute, it is stated, and the inventors have organized the Universal Loader Co., with a capital stock of $20,000, to build the machines which they propose to lease on the basis of 10c. a ton for all coal handled. It is proposed that plans will be issued from which operators can work in building their own machines.

Altoona, Penn.—The Russet Coal Co., supplying a large tonnage for domestic use into Altoona, is now producing about 350 tons per day, the entire output being hauled from the Buckhorn, where the mines are located, into Altoona by motor truck. The Russet company has started work on a new outside tramway one mile in length, which will shorten the truck haul to the city by four miles, or eight miles on a round trip. The company is also installing storage-battery locomotives. George W. Loudon is general manager.

Pineville, Ky.—The H. S. Peabody Syndicate, Management No. 2, has located its Kentucky offices in this city and will conduct its business in the state from this point. E. H. Mould, of Chicago, is in charge, with J. G. Wignall, of Chicago, at the head of the auditing department. The company with large holdings in Harlan County has purchased the land of the Kentucky Coal Lands Co., the G. H. Stearns Land and Lumber Co. and the Kentucky River Timber and Coal Co., or an aggregate of more than 100,000 acres in Bell, Leslie, Clay, Perry, Letcher and Harlan Counties.

Louisville, Ky.—Formal transfer of the Central Coal and Iron Co. mines at Central City, Ky., to the Madison Coal Co., a corporation controlled by the Illinois Central Railroad Co., has been completed. A. J. Mooreshead, of Chicago, president of the Madison company, gave a check for about $500,000 for the properties, C. T. duPont, chairman of the Board of Directors of the Central company; L. L. Denham, vice-president, and S. J. Gish, president of the company, all being present. As stated at the time in "Coal Age," negotiations for purchase of the properties to insure an ample fuel supply to the railroad were completed last summer.

Louisville, Ky.—A lower schedule of freight rates on coal from western Kentucky points on the Louisville & Nashville R.R. to destinations on that road in the state was agreed on in a compromise ratified by the Kentucky Railroad Commission at Louisville on Oct. 31. Most rates are reduced below the schedule prevailing on July 1, although some are slightly advanced. Complaints against the Illinois Central were presented and taken under advisement. One compromise, a rate of 90c. to West Point, Ky., and intermediate points on the main line, was reached. A reduction from the 80c. rate to Louisville is asked. The Ohio Valley Coal Producers' Association was the principal complainant in all cases, supported by commercial organizations of cities affected.

Washington, D. C.—The Corps of Engineers, U. S. Army, according to an official communication from Major O. B. Perry, Engineer Officers' Reserve Corps, has been authorized to raise by voluntary enlistment a special quarry regiment to consist of six companies of 250 men each and to be known as the 28th Engineers, National Army. This regiment is now being recruited and the first two companies are in training at Camp Meade, Maryland. All trades and occupations in the quarry business will be represented. Each company will have a sufficient number of skilled men to operate a separate quarry plant and will be equipped with a complete rock-crushing and screening plant capable of producing 1000 tons of crushed rock per day. Churn and air drilling outfits will be provided, and the equipment will include steam shovels, locomotive cranes, steam locomotives, cars and other standard quarrying machinery. Only men who have had experience in the handling of such equipment and those who have worked in and about quarries will be enlisted for this service.

Market Department

GENERAL REVIEW

Increase in mine price of coal has little effect on available supply as yet. Conditions slightly more hopeful in the East. Domestic fuel situation in the West critical.

Anthracite—During the past week, as in previous like periods, the movement of anthracite coal to Eastern markets has not been sufficient to satisfy the demand. Weather conditions have somewhat interfered with the movement of this fuel to New England. Throughout a large portion of the Eastern states retail dealers are making deliveries of only one ton to a customer, and, in many instances, the delivery equipment of these retail dealers is standing idle because coal cannot be secured for delivery. Of course, what coal was contracted for prior to the price-fixing regulations is still moving with fair dispatch, although even this movement has not been sufficient to care for the demand. In many instances, stocks have been depleted almost to the point of exhaustion, while in some cases small stocks have been accumulated. Orders to increase shipments of anthracite to the East are expected shortly. This should tend to quickly relieve the situation. Be this as it may, it is nevertheless the part of wisdom for all consumers to conserve, so far as possible, the supplies on hand, or in prospect, and use as much waste wood and other fuel as may be readily obtainable.

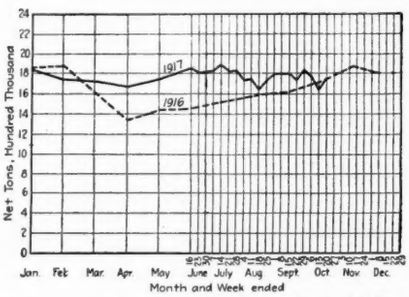
Bituminous—The situation in bituminous coal is rapidly resolving itself into a question of transportation rather than production. In many instances during the recent past, mines all over the bituminous region have been idle a considerable portion of the time on account of a lack of cars. This condition is doubtless responsible for much of the dissatisfaction and unrest existing among the mine workers. It profits a miner little if his price per ton is high and his output is small because his employer cannot get railroad cars wherewith to transport the mine product. The persistent belief exists, however, that the closing of Lake navigation, which should take place next month, will release a considerable amount of motive power and rolling stock which may be advantageously used in transporting coal to the markets where fuel is most needed. There is now little question but that the Northwest will have ample stocks of coal to carry it through a severe winter. Temporary revocation of the Lake priority order has already done much to relieve the stringency in fuel in various localities, and it is believed that the shutting off of this drain entirely will do much to overcome the existing shortage. The local fuel administration in Chicago has resorted to a "card system" in selling coal, not so much to cut down consumption as to forcibly discourage the practice of hoarding. It was found in many instances that customers would urge strong claims upon the dealer concerning their necessity for fuel and induce him to make a delivery of one or two tons. When this coal was delivered, however, it would be necessary for the truck driver to get into the customer's bin and mow back coal already in place in order to make room for the one or two tons which he was delivering. The card system requires the purchaser to fill out certain blanks, stating his probable requirements and the amount of coal he now has on hand. It is believed that the production of coal is even now ample to the domestic needs of the country if only the output may be justly and equitably proportioned.

Lake Trade—The movement of coal by Lake has shown a decided falling off during the past week and month. This has been due to many causes, one of the chief of which has been bad weather. Another has been congestion at the loading piers along the Lakes. In a measure, these two causes are interdependent and it is probable that the shipments during November will be less than those during October, which in turn were less than during September.

A Year Ago—Big deficiency in reserve stocks of anthracite and production light. Bituminous makes the biggest advance yet recorded, but the market is very sensitive. Increased shipments on contracts in the Lake district. Very stiff bidding for free coal in the Middle West.

COAL PRODUCTION

With the return to work of the striking miners in Illinois, the average production per working day rose to a level approximating the performance during the corresponding weeks of 1916. The total bituminous production last week was 10,665,956 net tons, an average of 1,777,660 tons per working day, as compared with 1,663,197 tons during the preceding week. A comparison of the curves for 1917 and 1916 shows that only by decided acceleration of the present



rate of production will the output during the remaining weeks of 1917 exceed that for the same period last year.

The week's production of beehive coke is estimated at 639,216 net tons, an average per working day of 106,536 tons.

Shipments of anthracite were reported as 42,338 cars, a figure almost identical with those for the preceding four weeks.

CARLOADS OF COAL AND COKE ORIGINATING ON PRINCIPAL COAL CARRYING ROADS WEEK ENDED:

	Oct. 6	Oct. 13	Oct. 20	Oct. 27
Bituminous shipments, 114 roads	186,752	188,863	175,246*	188,394*
Anthracite shipments, 9 roads	42,362	42,824	42,590	42,338†
Beehive coke shipments, 4 roads	13,561	14,111	12,946*	13,122†

* Revised from last report. † Subject to revision.

BUSINESS OPINIONS

The Iron Age—The situation has been further cleared by Government announcement, on Nov. 5, of agreed prices on sheets, wrought pipe, fence wire, tin plate, cold-rolled shafting and scrap. The new finished material prices as carefully worked out by the steel manufacturers committee, are in line with those previously fixed and the Government makes the important statement that on products not yet covered by official schedules the manufacturers have agreed to adjust prices promptly. Thus it appears that further Washington announcements are not to be looked for, unless at any time a general revision should be made.

The ill-advised agitation for contract abrogation by the Federal Trade Commission has tended to restrict buying of steel for commercial uses. The trade has done no little readjusting on its own account, since the shadow of Government price fixing fell upon it over four months ago. Today the outlook is that the present price basis will not be changed Jan. 1, but official assurance to that effect should come soon and it should be indicated also that no change will be made in the first half of 1918.

Bradstreets—Sentiment in business circles responds to weakness in the stock market, to the various propaganda for conservation of foodstuffs, and to the necessity of exercising caution at a time when prices for essentials are inordinately high; but over and beyond any such conditions is the fact that trade, wholesale and jobbing, is good, that retail distribution is improving, and that industry could not very well be more active. Of course the stupendous buying campaign of the Government, the greatest ever witnessed in the history of any country, overshadows everything else, and extends out to a veritable myriad of lines, thus creating superactivity, the true degree of which it is difficult to measure at this juncture.

Dry Goods Economist—Food conservation and price regulation share the attention of the public this week. The "Hoover pledges" have been well received and are expected to materially reduce consumption of unnecessary items of food. The efforts of the Food Administration to stamp out profiteering have already met with gratifying success.

American Wool and Cotton Reporter—The wool market has been fairly strong and active on medium wools, principally for Government purposes, and the total amount of business is about the same as that for a week ago, 3,500,000 lb. The market is very buoyant in spite of any effort to keep it down. There is little speculation, if any.

Marshall Field & Co.—Current wholesale distribution of dry goods equals the heavy volume of the corresponding period of a year ago. Road sales for both immediate and future deliveries show a large increase over the same week of last year. Collections are running strong.

Atlantic Seaboard

BOSTON

Modifications by Fuel Administration only slight, as yet, and have no appreciable influence on situation. Much concern over lack of any program that promises relief. Still no spot coal for steam-users who are eager to buy. Government requisitions and weather affect anthracite receipts.

Bituminous—Another week has elapsed with no significant move on the part of the regulating authority to remedy the serious situation on steam coal for New England. Car movement on the leading railroads shows a marked falling off from the corresponding figures of 1916, and this in face of a demand much greater. How long textile and other industries can continue to operate on diminishing stocks is a question that bids fair to be answered, in a measure, by Jan. 1.

That steam-users here have been able to keep running is due more than anything else to their own foresight based on experience of the past five years. Buyers have consistently enlarged storage wherever possible, and it is through the forehandedness of some in this respect that others are led to think that "enormous piles" should be passed around to succor the less fortunate. The assurance that the coal so taken will be replaced by the Government "as soon as it proves possible" does not seem to be exactly the equivalent for coal actually on hand.

Authority has been given, however, to the New England Fuel Administrator to permit consumers or distributors to sell a specified tonnage to any consumers actually in distress, the said fuel officer to be judge as to need and price, provided the latter shall not exceed the figure, authorized for retailers in an order dated Oct. 1.

Again, subject to approval from Washington, the Fuel Administration for this territory may authorize the sale of any carlot or cargo while still in the car or vessel, provided it has been shipped on a purchase made on or before Aug. 21 is actually in New England at the time of sale, and is to be delivered to a consumer or dealer found to be in immediate need. The seller in such instances is to be allowed compensation in excess of the $2 per net ton basis, up to a point determined by the New England Fuel Administration as the probable actual cost plus the prescribed commission of 15c. per net ton. Stated differently, coal coming forward on contracts entered into prior to the President's proclamation can be sold at 15c. advance, leave for each individual sale, however, to be first obtained from the fuel authority for this territory.

It remains to be seen how far such measures will tend to correct conditions; they are significant, however, as developments in the attitude of Washington toward the coal industry. That coal men have now been named in advisory capacities holds out a bit of encouragement for the future. That the drastic terms of previous orders have been relaxed even to this small ex-

tent is regarded as an indication that further grants will come, eventually.

Meanwhile, some attention is being given movement all-rail. Effective Nov. 2, coal consignments east of Pittsburgh began sharing the same priority or preferential shipment that for some weeks has been confined to coal for the Northwest. At this writing it is too early to measure the effect of this order, but certainly it is obvious that the coal contracted for in this territory in excess of $3 per gross ton was sufficient to help the situation materially. If mines on the B. & O., for instance, mines of large capacity, could be given the cars and movement could be facilitated to make the available car-supply more effective, New England would regain, to a degree, one of its accustomed sources of supply.

The Hampton Roads terminals, hitherto shipping the largest tonnage to this quarter, are of necessity most responsive to the unparalleled demands occasioned by war, but apparently there is no gate open for replacing the diminished receipts here from the West Virginia districts. The status of contract coal from the smokeless region is gradually being cleared up through recent decisions of the Shipping Board. Sharp controversies that have arisen over charter terms negotiated some years ago and with several years yet to run, have been adjusted, subject in some cases, however, to court review. It is not by any means so apparent that owners of steam tonnage are to be exclusively the beneficiaries of the recent commandeering of bottoms.

So far as we are advised, there is no spot coal offering in any direction. The manufacturer who did not contract for an adequate supply prior to Aug. 21 has a poor outlook for requirements.

Shippers who inserted in their contracts last winter and spring a clause reserving the right to mark up the contract figure in case of wage increases to mine-workers are apparently not going to be allowed to add the wage increase recently adjusted through the Fuel Administrator. To many this seems distinctly a modification of the terms of contract, and there is discussion over the probable outcome.

No quotations can be reported, beyond those of the authorized basis which is now $2.45 per net ton, f.o.b. mines plus 15c. commission per net ton. This figure, however, cannot be considered a "quotation" because few operators or shippers today having coal available for this market are willing to commit themselves at the price named.

Anthracite—While the weather continues mild the retailers are apprehensive of what the winter months will bring forth. Receipts are no better, and both rail and water shipments are at a minimum. Just at this time the larger shippers by barge are giving preference to consignments to the Maine ports that normally are icebound soon after Dec. 1.

Rates on Philadelphia & Reading Ry. barges were advanced Nov. 2 from $1 to $1.25 on anthracite to Boston points, and beginning Nov. 1 a war tax went into effect that on Tidewater shipments amounts to more than 7½c. per ton. This makes a newly increased cost of nearly 33c. to retailers who have just been filing their returns with representatives of the Fuel Administration.

NEW YORK

Orders to increase shipments to this market expected shortly. Retail dealers hardpushed and considerable equipment is idle on account of no coal. Demand increasing and dealers delivering one-ton lots. Jobbers cannot find coal. Bituminous operators hopeful that prices will soon be revised, and look for a better labor supply now that wages have been advanced. Market condition serious.

Anthracite—The anticipated relief from the serious shortage which has confronted the trade for several weeks has not yet arrived. Demand is increasing steadily and with stocks in the local yards decreasing there is more than a likelihood that unless something is done soon to relieve the pressure some retail dealers will go out of business. At the present time considerable of their equipment is idle because of the lack of coal.

It was expected that before now some of the coal being shipped to other sections would have been diverted to this market and the report that the Fuel Administrator had such a move in contemplation was welcomed. So far no such diversion has been ordered, although those in authority have been made acquainted with conditions as they exist here. Lower temperatures have increased the demand and the dealers have in many instances refused to deliver more than one ton at a time unless the call is urgent. This tonnage may be reduced to half a ton before the winter is over.

The situation at the loading docks is serious. Receipts do not measure up to anything near normal and there are a great many boats waiting for cargoes. In the meantime charges are piling up.

The domestic sizes, including pea, are scarce. Middlemen are invariably unable to get coal sufficient to take care of their regular trade. Much of the product is being shipped direct from the mines to meet Government requirements.

The mining regions are reported to be practically free from labor disturbances and the mines are working almost to capacity, although short of labor.

The steam sizes are in good demand but supplies are low and hard to get. Considerable "dust" is being sent to this market, the buyer mixing it with bituminous. It is being quoted at from 50c. to 75c. at the mines.

The city is in the market for a few hundred thousand tons of various sizes for department requirements until Mar. 1 and many dealers have been invited to submit prices. A recent opening for a much smaller tonnage resulted in prices being received which were considered too high and nothing was done in regard to making purchases.

Current quotations, per gross ton, f.o.b. Tidewater at the lower ports, are as follows:

	Circular	Individual
Broken	$5.95	$6.70
Egg	5.85	6.60
Stove	6.10	6.85
Chestnut	6.20	6.95
Pea	4.70	5.75
Buck	3.95@4.65	5.50@5.75
Rice	3.40@3.60	4.50@4.75
Barley	2.90@3.15	3.50@3.75
Boiler	3.15@3.40	.....

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The trade is at least hopeful that the long-awaited revision in prices for central Pennsylvania coals is about to be made. The increase in wages granted the mine workers of that region will prove a hardship to most operators unless they are permitted to sell at a price much higher than $2 per net ton.

The market is in serious condition. There is no free coal at this port and no sales at the present mine figure are heard of. Most contract holders are not getting their full requirements and many plants in this section are reported as being completely out of fuel and operating scarcely more than half time.

Production has been bad along the B. & O. and the Pennsylvania lines. Cars are short and labor slow and discouraged. The railroads are getting their share but the industries must wait for theirs and are being crippled. Along the New York Central and Western Maryland lines the car supply is better but the labor supply is bad and there is much slowness in this regard. Many operators say that when they have the cars the mine workers remain at home. Operators are hopeful that labor conditions will improve now that the miners have been granted advanced wages and expect that many of the men who have gone into other industries, particularly the steel works, will return to the mines.

The New England situation is consuming considerable attention here. There is a serious shortage of supplies and it is pointed out that unless there is a considerable increase in production during the next two months, this condition is more than likely to exist throughout the winter.

Preparations are being made by many plants which have depended upon coal supply for their power to purchase electrical energy from the New York Edison Co.

PHILADELPHIA

Anthracite shortage reported serious. Some believe situation not so bad. Relief seems near. New prices for first half of November. Bucket sales investigated. Bituminous shipments short. Steel plants assured supply. More cars promised by new order. Little coal at Government price.

Anthracite—After weeks of investigation, the Fuel Commission for Philadelphia is convinced that this section needs substantial shipments of anthracite in the near future. This fact was demonstrated by the commission's request to Mayor Smith that he prohibit the making of bon-fires in celebrations following the election this week. The fact that the commission has asked that the wood thus consumed be saved for fuel has served to vividly illustrate the need of coal. After investigation of the local situation, chairman Lewis states that local dealers normally have in their bins at this season about 450,000 tons of anthracite. There are now not more than 100,000 tons in the dealers' yards. With 350,000 householders to be taken care of this makes only ⅓ ton for each, as against 1⅓ tons in normal times. We doubt if this takes into consideration the immense tonnage already stored in the cellars of the consumers. Unquestionably there is a shortage of coal here and an unusual demand for it, but it is really being made more acute by continual reference to it through the press. Dealers are being pressed for supplies for homes that are not in need. This is making it particularly difficult for dealers to distribute their tonnage to the best advantage. Ever so many dealers have given good attention to the better class of trade, and if there is any real suffering it will be in the more humble homes.

There are some in well-informed circles who feel the local committee is unduly pessimistic as far as this territory is concerned. The members are serving faithfully, but like many others who have been heard, they are not practical coal men. An empty coal yard is not unusual, nor is it always a strong argument for coal during these abnormal times. A dealer can truthfully report that he has not a ton in his yard, then receive a substantial shipment and in a few days have the same plea.

This city's proximity to the coal region will prove to be its salvation. Coal must and will come here and while it will be scarce all winter there will be no famine.

It is believed that a maximum tonnage will be achieved for at least two months now and if this is attained it is almost certain that the greater proportion of it will stay in the East. It will be manifestly impossible to continue its shipment to distant points on account of a lack of cars and motive power.

A meeting at the offices of the Federal Trade Commission occurred this week attended by some of the presidents and all the sales agents of the big companies. These shippers were requested to consign as large a tonnage to this territory during November and December as they did during the last two months of 1916. Shipments last winter were unusually heavy, and we understand that arrangements are now being made to at least equal them this year. The most urgent cases here are those of dealers located on the line of the Pennsylvania R.R., some of whom have had no coal for weeks. The embargoes via that road which have worked havoc in the trade have been removed for the time being. An official of one of the larger companies says that the removing of this embargo will really have more effect on local conditions than the modification of the priority order.

The trade along the P. & R. Ry. tracks has all along been in better shape than on the Pennsylvania R.R. The largest operating company has held up its end, while there has been an unusual tonnage from independents. The latter, however, have only undertaken to take care of their regular trade and since prices have been fixed on a permanent basis are turning a deaf ear to new business.

Dealers are somewhat encouraged at the willingness of the Government's representatives to listen to their plea for a flat gross margin of profit of $2.50 per ton. They have presented their books and figures in every possible detail and are now led to believe that their case is to be favorably recommended to Fuel Administrator Garfield.

There was some confusion on the part of the retail men in issuing their new prices for the first half of November, as those dealers without coal in their yards, and there were many, felt that they need not issue prices until they had coal to sell. However, this has now been remedied and the new figures produced much interest. One of the largest retailers in the city quoted new prices of egg, at $8.35, stove $8.40, chestnut $8.65, pea $6.90, per gross ton. Because this company recently received a fair quantity of company coal bringing down its average cost, these rates are lower than those previously in effect, the difference being 15c. on egg, 5c. on stove, 15c. on chestnut and 70c. on pea. Taking the general run of the dealers some prices are lower and some higher and the variations are represented by the following table, showing the highest and lowest quotations:

	Egg	Stove	Nut	Pea
Highest	$8.55	$8.65	$8.90	$7.75
Lowest	8.20	8.40	8.50	6.90

The local commission has now taken hold of the problem of excessive prices alleged to be charged for coal by the bucket. It is alleged that in some instances

recently small purchases have been at the rate of $20 a ton. While almost every retail yard does some business of this kind, it is not catered to and is only tolerated as a matter of accommodation. The bulk of this business is done through small stores making their purchases in ton lots from the regular retailers. The commission believes that people who purchase their coal in this manner are the class who most need protection and while admitting that fuel sold in this way must necessarily cost more, they do not think present rates are justified. It is their present intention to get a Governmental ruling on the situation whereby sales to small retailers will be controlled through the regular dealers.

It practically has been decided not to oppose the individual operators on the question of premium prices. There were some in the trade who vigorously denounced the ruling allowing them 75c., or when handled through brokers 95c, above the company circulars. It is thought unwise to bring the question before Dr. Garfield at this time. Lower prices cannot add to efficiency in production and coal is now wanted regardless of price.

The steam sizes have recently undergone little change. Buckwheat could easily be sold at $5, but the operators deem it unwise to go the limit. Rice continues active at from $3 to $3.25. Barley on the Pennsylvania R.R. freely brings $2 to $2.25, on the P. & R. Ry. $1.80. Culm of ordinary quality is bringing close to 55c.

The prices per gross ton f.o.b. cars for line shipment and f.o.b. Port Richmond for Tide are as follows:

	Line	Tide		Line	Tide
Broken	$4.55	$5.70	Buck	$2.90	$3.50
Egg	4.45	5.75	Rice	2.40	3.40
Stove	4.70	6.00	Boiler	2.20	3.30
Nut	4.80	6.05	Barley	1.90	2.15
Pea	3.40	4.30			

Bituminous—Receipts recently have continued at the same volume prevailing for the past month. Some of the larger plants have been able to stock fair quantities recently, and a number of spontaneous fires have occurred. Nevertheless the general run of industries are working on a close margin and are only too glad if they are able to keep from shutting down.

The steel plants hereabouts have been much encouraged by the recent order issued by the Fuel Administration that their plants be given preference in shipments.

Another promising feature is an order prohibiting the use of flat cars for the transportation of any material entering into the construction of anything that can be construed as a luxury. If this order is strictly adhered to—and there is a heavy penalty for its violation—there will be a great improvement in the car supply.

The new Government price, in operation for two weeks, has made little difference in the offerings of spot coal. Some difference of opinion exists as to the interpretation of the new price ruling. Some profess to believe that it is not the Government's intention that all coal shall immediately be raised to $2.45 per net ton, but that this figure is only to be construed as a maximum. There have been few sales here at this figure, although one shipper offered to deliver 200 tons weekly at that price. On the whole, the majority of the coal moving continues to be applied on contracts.

There is another rumor abroad that the Government is considering a further upward revision of prices in the case of operations working thin beds and of some operations which are in financial difficulties. The trend recently seems to be toward the administration coming to consider each mine on an individual basis, although as yet there is far from any positive assurance of this.

BALTIMORE

Coal of all kinds scarce and demand heavy. Jobbers, after busy week in Washington, believe they will be protected.

Bituminous—While there has been a little better supply of soft coal at Tidewater piers, the amount received has not been anything like enough to care for the demands of the water-front plants, and the bunker business. Hauling of coal to these plants from all-rail points, some quite distant, continues. Many plants in all parts of the city and suburbs are still working from hand to mouth in fuel supply, and should hard weather tie up traffic for any period there will be numerous closings.

Several prominent Baltimore jobbers spent a good part of last week in Washington conferring with Dr. Garfield and Mr. Nims. Facts were presented to the administration to prove that the jobbers are necessary to effective distribution, and the general impression gained was that fuel rulings will fairly protect that end of the trade.

The trade is still awaiting the naming of a fuel administrator for Maryland. The names of Walter B. Brooks and Francis M. Jenks, have been prominently mentioned. August reports of the railroads show a big falling off in fuel tonnage, which is blamed on congestion rather than on the low-price of coal curtailing shipment.

Anthracite—The hard coal men continue to sell at their October schedule pending any action to definitely fix distribution prices here for either hard or soft coal. Supplies in many cases are desperately short, and the comparatively light arrivals are being distributed with extreme care. A number of city buildings are reported as needing fuel. Mayor Preston, who was disappointed in getting cars for transportation of low-priced coal promised him, has threatened drastic action to keep needed departments going. The entire situation is disquieting with winter weather so near. An exceptionally cold late October has already caused fires to be going for two weeks longer than usual at this time of the year.

COASTWISE FREIGHTS

No change can be quoted this week in rates from Hampton Roads to Boston, $3 continuing the nominal freight on barges and $2.50 on steamers. Charters are few, however, and the bulk of the coal received continues to come in bottoms engaged on season charters.

Barge freights from New York to points on Long Island Sound range from $1 to $1.30, depending upon class of barge and dispatch. A 400-ton schooner was chartered from Philadelphia to the Kennebec River at $3.50 plus river towing, 8 days to load and discharge.

Lake Markets

PITTSBURGH

Coal more plentiful, cars very scarce. Consumers supplied about as formerly.

Conditions in the coal market have taken on a decidedly new aspect, the situation this week being that there is a great deal of coal offered at the Government price, but not enough cars in which to move it. Consumers and brokers are being offered coal freely, if they will find the equipment for it.

This situation is interpreted as being the outgrowth, presumably the unexpected outgrowth, of the rescinding, under date of Oct. 31, effective Nov. 1, of the Lake coal priority order, in the case of 22 roads, and leaving the order in effect on 27 roads. The roads relieved represent on the whole by far the major part of the coal movement of the Pittsburgh district. Presumably the assumption was that when the Lake priority order was removed cars would be furnished for commercial loading instead, but it is evident that this did not occur. The coal was released but there is not a corresponding supply of cars, hence the offering of coal at mine, the buyer to find the equipment. Some hopes are entertained that there may be an improvement in the supply of open-top cars resulting from the order of Oct. 27, prohibiting the use of open-top cars in moving material for road building and repair, for building places of amusement and for making furniture and passenger vehicles, but no results are observable thus far.

Consumers of coal are supplied about the same as formerly, with perhaps a little less scarcity, but there is still a great deal of complaint.

We quote the market at $2.20@2.35 for slack, $2.45@2.60 for mine-run and $2.70@2.85 for screened, per net ton at mine, Pittsburgh district, the hgiher prices being for sales made by jobbers.

TORONTO

Active demand for anthracite. Dealers filling delayed orders. Supplies coming forward steadily but in small volume. Trade satisfied with fuel controller's regulations. Speculation eliminated.

The recent setting in of cool weather has stimulated the demand for anthracite, but owing to the fact that so many consumers have laid in their winter supplies early, dealers are not as busy as usual at this season on new orders, and are overtaking delayed deliveries as rapidly as limited supplies will allow. Customers are mostly being supplied with small quantities as needed. There is a considerable scarcity of stove coal. Railway deliveries from the mines are coming in steadily, but consignments are light in volume. Little bituminous is being received.

The trade is generally satisfied with the regulations issued by the fuel controller. The class mainly affected will be the jobbers, the tendency of the regulation being to eliminate speculative operations. Prices have been steady for some weeks and no immediate change is considered probable.

Quotations for best grades per short ton are as follows: Retail anthracite egg, stove, nut and grate, $9.50; pea, $8.50; bituminous steam, $9, slack $8 to $8.50, domestic lump, $10, cannel, $11; wholesale f.o.b. cars at destination three-quarter lump, $7 to $7.50; slack $6.85 to $7.

BUFFALO

Bituminous situation is unchanged. What is wanted is cars before the movement improves. Jobbers doing nothing. Anthracite movement cut down by storms.

Bituminous—The movement of coal does not appear to have been affected by the advance in price. Jobbers say there is no free coal on the market. One of them alleges that as soon as the stocks the big consumers had before the price was put down are used up the situation will be grave and he estimates that these consumers are using three times as much as they are receiving. This may be an extreme view of the case, but it seems certain that the consumption exceeds receipts considerably and an end of the surplus will be reached before long. Will the authorities find a way to forestall it?

The great difficulty is lack of cars. The miners are not working as they should, but it is claimed that they would do better if the car supply could be depended on. It does not appear that any of the mines are getting the cars they could use. No adjustment of price will do away with this difficulty. No matter if some of the thin-vein mines can now start up, no more coal will be shipped.

Anthracite—The feature of this trade is the large amount moving by Lake, which necessarily cuts down the local supply to much less than is wanted. But the plan is to pour out the coal to the Northwest as long as the Lakes are open and then fill up the city bins, which ought to be done speedily.

The custom house reports the October shipment by Lake at 676,419 net tons, of which 48,404 tons went to Canadian ports. For the season the shipment was 3,415,399 tons, as against 2,267,946 tons to November last season. To the last season's total should be added 750,000 tons which was shipped by Buffalo parties at Erie, Penn., but this is still 400,000 tons less than the amount this season.

CLEVELAND

Poor car supply and winter weather seriously affecting domestic market. President's order increasing mine price expected to increase output. Lake shipments for October show big decrease.

The poor car supply at the mines on Oct. 29 making it impossible for operators to ship but little coal to dealers on that date, in compliance with Dr. Garfield's order, and the cold and stormy weather of the past few days has put the domestic market in a serious condition. The result has been that many mayors of Ohio cities have been seizing coal destined to Lake, industrial plants and railroads and doling it out in one ton lots to domestic consumers. This has forced several railroads to serve injunctions to protect themselves.

The President's order of Oct. 29, raising the price on all grades of bituminous coal 45c. per ton at the mines, seems to have been favorably received and now that the mine workers will receive another wage increase it is expected that they will put forth their best efforts to help the mine owners to produce the greatest tonnage possible.

On account of the shortage of cars, shipments of Lake coal for month of October decreased about 525,000 tons, as compared with the month of September. The total loaded at Lake Erie docks in October amounted to 4,083,227 tons. Shipments of bituminous coal to Northwestern docks up to Nov. 1 were nearly one million tons ahead of the same time last year, amounting of 22,763,190 tons, while shipments up to Nov. 1, 1916, amounted to 21,863,234 tons.

Following are the market prices per short ton, f.o.b. Cleveland:

	Three-quarter	Mine-run	Slack
No. 8	$3.75	$3.50	$3.25
Cambridge	3.75	3.50	3.25
Middle District	3.90	3.65	3.40

Jobbers' prices are 15c. per ton higher than the above prices.

TOLEDO

The demand for coal has increased threefold during the past week, according to reports of dealers. Although 200 cars of lump coal were received during that time, it has all been distributed and consumers are again clamoring for fuel.

The fuel board of this county, which was recently appointed, is working out a scale of prices for the retailers. It is expected that an adequate margin of profit will be allowed. Many small retailers have closed their offices owing to inability to supply their customers. The majority of the large dealers have a little coal on hand, and are taking orders for one-ton deliveries. It is said an effort will be made in the future to get the people to use a substitute for coal, such as waste lumber and the like. It is thought the severe shortage will continue even after the close of navigation. Much fuel will be needed in the East, especially by the navy. Dealers in the small towns near-by continue to want coal, and in many instances the supply of gas has been shut off, making conditions much worse.

Members of the county fuel board are endeavoring to find out exactly how much fuel the factories and public institutions in the city need each week. It has been decided to allow each county so much coal each week, and factories working on Government orders have been asked to send in their requirements so that they will receive a sufficient and sure supply of fuel. Four factories were forced to close down for a day last week owing to the fuel shortage. Another, which had many tons of steel in its furnaces for Government work, would have shut up shop if a carload of coal had not been delivered immediately. Operators report labor troubles and severe car congestion on the railroads as the main factors opposing them in their efforts to supply consumers promptly. Many operators declare they will be forced to close their mines very soon unless something is done to relieve the existing transportation congestion. It is felt among coal men here that the Government's proposed movement of coal from Ohio mines on Monday for domestic consumers will be a failure unless cars at present on track are moved or unloaded.

Prices have been changed at the mines in some instances, but no authentic price-list has been issued to wholesalers which would cover the entire field. It is expected prices will be standardized some time this week.

DETROIT

Steam coal scarcity is unrelieved. Supply of domestic is not improved. Anthracite receipts are light. Lake shipments diminish.

Bituminous—Users of steam coal are still having a strenuous time in the attempt to find fuel in Detroit. Wholesalers and jobbers assert they are unable to get any stock except such coal as is being sent to Detroit to apply on contracts closed before Aug. 21 last. With no free coal on tracks and apparently none to be had at the mines, consumers are operating on a precarious basis. Reduction of activity in some lines of manufacturing tends to relieve the situation slightly. There are frequent reports, however, of the temporary closing of plants, which are reopened when a few days' additional supply of coal is obtained.

Pressing demands for domestic coal are still coming to James Couzens, the municipal coal dictator. Those in most urgent need are being supplied from shipments of coal arriving for the city, which were bought at a price in advance of the Government figures. W. K. Prudden, Michigan coal administrator, has become so apprehensive as a result of the deficient supply of coal in the state that he has practically decided to go into the market and buy coal for Michigan consumers, if it can be found, even at prices higher than those set by the Government.

Anthracite—Though some jobbers believe the anthracite situation has improved slightly, receipts are light. Stock that was ordered sent to the relief of Michigan, is reported, this week, to have been diverted to Atlantic coast points, presumably for shipment to Italy.

Lake Trade—Shipments by Lake have been reduced. In October the total loaded at Lake Erie ports fell below September's average of 1,000,000 tons a week.

COLUMBUS

Demand for steam and domestic grades is still the chief feature of the coal trade in Ohio. Scarcity of stocks is reported in every locality.

A marked scarcity of stocks still exists in all parts of Ohio and consumers, both domestic and steam, are clamoring for coal The Federal authorities have not made arrangements for relief as all of the coal is still ordered to be shipped to the Northwest. Colder weather has made the situation more serious, although real emergencies have been taken care of. Indications point to some genuine suffering and a marked scarcity of coal during the early winter months at least.

Retail demand is active and dealers are overwhelmed with orders. In most instances they are following the policy of supplying a ton or other small amount to tide over for the time being. Retail prices which were fixed a week ago, have been revised again by adding 45c. on all prices of soft coal. Pocahontas is in strong demand and stocks are scarce. The same is true of West Virginia splints. Domestic coke is selling well.

Production is good in every district, although car shortage and congestion is cutting down the output in some localities. This is especially true of Pomeroy Bend and Hocking Valley where the production is estimated at 65 per cent. In eastern Ohio the output is about 55 per cent. and the same figures are reported from Massillon, Cambridge and Crooksville.

Prices on short tons f.o.b. mines are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump	$2.70	$3.05	.....
Inch and a quarter	2.70	3.05	$2.70
Three-quarter	2.70	3.05	2.70
Nut	2.70	3.05	2.70
Egg	2.70	3.05	.....
Mine-run	2.45	2.70	2.45
Nut, pea and slack	2.20	2.70	2.20
Coarse slack	2.20	2.70	2.20

CINCINNATI

Continued cold weather and heavy demand mark the situation here, and efforts are directed toward careful distribution of the available supply. No suffering is expected, however.

With continued cold weather, such as to make heating necessary in homes and elsewhere in order to avoid suffering, the demand for coal continues at a rate which is much beyond the ability of the trade to supply. The efforts of coal men and of the authorities are consequently bent toward distributing the available supply in small lots, so as to give some coal to all who need it. The city has secured in the open market enough coal for its immediate requirements, after being unable to get bids for its full supply.

The regulation of prices to be charged by wagon peddlers selling by the bushel to the poorer classes is being considered, as it is these who are most in need of coal, and are unable to pay high prices. A figure of 35c. a bushel is contemplated for this class of business. Dealers declare that prices now prevailing in the retail trade in Cincinnati are below those authorized by the Government, with the 30 per cent. additional charge figured in, and point to the fact that local prices are much below those asked elsewhere. Well-posted men are of the belief that there will be no shortage of coal in this market during the winter if care is used in distribution, but the present situation is due, it is pointed out, to the failure of the public to stock coal during the summer months.

LOUISVILLE

Milder weather, lessening domestic demand, slightly relieves the steam coal situation. Prices advanced 45c. Still no coal to be bought on open market.

Several days of moderate temperatures immediately after the first of November, resulting in a diminution of the demand for domestic coal, enabled shippers to divert some shipments to industrial consumers. Prices on practically all coals were advanced immediately 45c. on the strength of the Government order. The stress in the north Central part of the country continues unabated, with no coal at all on the open market and operators declining to accept orders or taking them only on promise of filling them when they may be able to. Industrial consumers whose contracts lapsed during the summer are face to face with suspension.

A congestion has developed in the Louisville terminals which is badly delaying placements of coal for retailers. Most retailers have none at all; none are getting more than two or three cars a day. It is proposed that the price be advanced on the 45c. basis to cover adjustment when the Government retail prices are announced. The Kentucky Fuel Administrator has held conferences with retailers stating that he will take no drastic action unless necessary and that he will take none until he has become familiar with the conditions.

BIRMINGHAM

Both steam and domestic trade appealing for coal, while supply continues short. Production heavy, though not up to capacity on account of labor shortage.

Steam and domestic coal is being more eagerly sought than for several months past, and consumers and dealers are making earnest appeals to the mines to accept their orders. However, the supply for the spot trade has not materially increased and only a limited amount of business can be booked. Government prices announced on Oct. 1 are being observed, advantage not being taken of the 45c. per ton increase recently announced by Administrator Garfield, the consensus of opinion among operators being that such advance did not apply to the Alabama field.

New mines are being added almost daily to the district producing facilities and old collieries are running on the fullest possible schedules consistent with labor conditions, but it seems impossible to keep pace with the demand under the existing circumstances.

Coke

CONNELLSVILLE

Production and shipments unsatisfactory. Charges against operators of unwillingness to sell at set price. New byproduct capacity to help blast-furnace situation.

The coke-market situation is very unsatisfactory. Production and shipments are lighter than they should be, the chief complaint being shortage of cars. But apart from the restricted shipments there is a disposition on the part of some operators to hold coke back from the market, or even to seek a price higher than the set price. A very few operators have undertaken to contend that the $6 price was not legally fixed. This attitude if persisted in is likely to get them into trouble, according to the view of the generality of the trade.

A delegation of coke consumers and producers is in Washington at this writing in conference with the Fuel Administration in hopes of developing arrangements for better production of coke and a freer market movement.

Again the report comes from Washington that the Government will reduce the set price for coke and at the same time establish differentials for grades. The $6 coke price was generally regarded as too high, in relation to $2 coal, and now that the coal price has been increased only to $2.45, a slight reduction in the coke price would be considered more or less logical.

Trading in coke is quite limited, but so far as can be reported it is all at $6 per net ton at ovens for furnace grade, while in foundry coke a little business is being done at $7, with the understanding in some cases that the price will be readjusted in case the Government establishes some other differential than $1.

Owing to the shortage of coke the production of pig iron continues at not over about 90 per cent. of the capacity of the blast furnaces available for operation. The Carnegie Steel Co. has a number of furnaces out of blast or banked, but now entertains hopes that some time next month it will have completed and in operation about half of the 640 byproduct ovens under construction at Clairton, the entire equipment of ovens to be completed early in the new year. The plant eventually will have 1280 ovens. The coal will be received and the coke distributed entirely by water, thus relieving the railroads. The 640 ovens would produce about 10 per cent. as much coke as the entire Connellsville and lower Connellsville region is now producing.

Birmingham—The coke market is quiet in so far as sales are concerned, practically none having been made during the past week. The inquiry continues strong. No action has yet been taken in placing prices in alignment with the schedule agreed upon between Government officials and the Connellsville district producers. The restriction in sales is attributable to the scarcity of coke. The 60 byproduct ovens of the Woodward Iron Co. are now in operation. Their output will be consumed at Woodward.

Buffalo—The market is hard to find, as the local price is about as badly tied up as that of bituminous coal. It is claimed that no effort has been made to interpret the regulation price of $6, as to whether it is part intended as a jobber's profit or whether it is meant for foundry or some other grade. Coke arrives in much the usual quantity, but it all goes on contract. That the amount wanted is larger than ever is shown by the receipts of iron ore by Lake, which was, for October, 1,264,032 gross tons, said to be the largest amount received in any one month at this port.

Middle Western

GENERAL REVIEW

Shortage existing in many dealers' yards in Mid-West territory. Retailers restricting deliveries.

At this writing retail coal dealers throughout the Mid-West territory are face to face with depleted stocks of most of the various kinds of coals usually handled, especially Eastern fuel, and desperate efforts are being made to secure supplies, not only through direct efforts with the wholesalers but also through appeals to the State Fuel Administrator. Deliveries have been restricted to one-ton lots, and in some cities householders are compelled to file data, with local fuel administrator, showing amount of coal in their bins before additional deliveries will be made.

The mines in the Indiana and Illinois fields worked as near to capacity as car supply would permit, during the past week. There has been no labor trouble since the settlement of the last controversy, and for a few days during the early part of the week many mines ran to full capacity, producing a heavier tonnage than for some time.

Illinois operators have virtually promised State Fuel Administrator Williams to raise the output of Illinois mines from 65 per cent. to as high as 85 per cent. of capacity if sufficient cars to handle the fuel are furnished. Attention was also called to the fact that in a special Act of Congress of May 29, 1917, the powers of the Interstate Commerce Commission have been greatly amplified in the matter of car distribution in order to meet just such conditions as now prevail.

If the coal production can not be increased it follows naturally that there must be a continuation of universal shortage, or certain users must be determined as non-essential to the public welfare and their total supply stopped, at least temporarily, so that immediate necessities of essentials may be fully met.

The railroads acting through Judge Lovett have already taken such action with reference to the application of railroad cars—they have no authority, however, to deny the movement of coal which is loaded and offered to them for movement, nor is it within their function to determine the essential and non-essential user of coal—that is solely within the domain and determination of the Federal Fuel Administrator.

CHICAGO

Fuel tickets now being used by buyers of domestic coal. While many manufacturing plants have ample supply, most dealers' stocks are at low ebb, especially of anthracite and other Eastern fuels.

The chairman of the Chicago coal committee, Raymond Durham, has devised a card which must be filled in by all purchasers of domestic coal before deliveries will be made. This card furnishes information as follows: "1. Amount of coal decided. 2. Kind used last year. 3. Approximate amount used last year. 4. Pounds or tons on hand at present. 5. Will last approximately . . . . days. 6. Have you any unfilled orders with other dealers? I hereby certify that the above report is true to the best of my knowledge and belief. (Signed) ————."

The State Fuel Administrator has estimated that Chicago's supply in the hands of the retail dealers is equal to the demands for 10 days. Anyone making false statements to obtain additional supplies will be refused deliveries, and coal cached in warehouses, basements and other places and not needed by the owners will be commandeered when found. Retailers and operators are coöperating in every way with the state officials to meet the needs of the situation. Complaint is made that, according to drivers, many people who declared they had no coal, even making the plea of sickness in the family, are found to have plenty of coal in their bins.

Chicago jobbers of anthracite are unable to satisfy the demands, and it is evident that there is a serious shortage existing at this time. The Peoples Gas Light and Coke Co. is much concerned over its inability to secure ample supplies of either anthracite or Pocahontas coke, and claims its reserve stock should now amount to 90,000 tons—that Dec. 1 will see the company barely operating, and Jan. 1 will see it completely shut down, cutting off the city's gas supply, providing more adequate supplies are not received.

The new wage scale with increases amounting to 10c. on mining rate, 15 per cent. increase on yardage and deadwork, and $1.40 on day labor became effective Nov. 1, and sales are being made on basis of the new prices which are 45c. per ton higher than formerly.

Quotations in the Chicago market are as below, per net ton f.o.b. cars at mines:

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Springfield	Carterville	Grundy, LaSalle, Bureau and Will
Steam lump	$2.65@2.80	$2.65@2.80	$2.65@2.80	$2.65@2.80	$2.65@2.80	$3.10@3.25
Domestic lump	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	3.10@3.25
Egg or furnace	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	3.10@3.25
Small egg or nut	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	3.10@3.25
Stove	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	3.10@3.25
Chestnut	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	2.65@2.80	3.10@3.25
Pea	2.65@2.80	2.65@2.80	.....	.....	2.65@2.80	.....
Washed egg	2.65@2.80	.....	.....	.....	2.65@2.80	3.10@3.25
Washed stove	2.65@2.80	.....	.....	.....	2.65@2.80	3.10@3.25
Washed nut	2.65@2.80	.....	.....	.....	2.65@2.80	3.10@3.25
Mine-run	2.40@2.55	2.40@2.55	2.40@2.55	2.40@2.55	2.40@2.55	2.85@3.00
Screenings	2.15@2.30	2.15@2.30	2.15@2.30	2.15@2.30	2.15@2.30	2.60@2.75
Washed slack	2.15@2.30	.....	.....	.....	2.15@2.30	2.60@2.75

	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Smokeless: Pocah. and W. Va.	Smokeless: Penna.	Hocking	West Va. Splint
Dom. lump	$2.65@2.80	$2.65@2.80	$3.10@3.25	$2.70@2.85	$2.70@2.85	$3.05@3.20	$2.85@3.00
Steam lump	2.65@2.80	2.65@2.80	3.10@3.25	2.70@2.85	2.70@2.85	3.05@3.20	2.85@3.00
Egg	2.65@2.80	2.65@2.80	3.10@3.25	2.70@2.85	2.70@2.85	3.05@3.20	2.85@3.00
Small egg or nut	2.65@2.80	2.65@2.80	3.10@3.25	2.70@2.85	2.70@2.85	3.05@3.20	2.85@3.00
Mine-run	2.40@2.55	2.40@2.55	2.85@3.00	2.45@2.60	2.45@2.60	2.80@2.95	2.60@2.75
Screenings	2.15@2.30	2.15@2.30	2.60@2.75	2.10@2.25	2.10@2.25	2.55@2.70	2.35@2.50

MILWAUKEE

New price schedule shades Pocohontas screened 55c. per ton, and West Virginia splint 25c. Pittsburgh and Youghiogheny screened up 5c. Retailers prepare petition for an increase in their margin of profit.

The coal price schedule at Milwaukee has undergone several slight changes since last week, the most important of which is a reduction of 55c. in the price of screened Pocahontas, which now sells at $9.20. West Virginia splint has also been lowered to $7.50, a drop of 25c. Pittsburgh and Youghiogheny screened are up 5c., being now quoted at $7.25.

The retail coal dealers of the city have joined in a petition to W. N. Fitzgerald, state fuel commissioner, requesting him to secure a modification of the margin of profit at present accorded them by the ruling of Dr. H. A. Garfield. They hold that every expense connected with the coal business has increased from 40 to 60 per cent. since 1915, and that the margin of 30 per cent. over the gross margin of that year is insufficient at the present time. Many small dealers claim they will be forced out of business if the prevailing price regulations are not changed.

ST. LOUIS

Just enough tonnage moving in from the Standard field to take care of temporary requirements; practically nothing from the Mt. Olive or high-grade field, and no Eastern shipments. Mild weather has eased the situation. Unusual demand for all grades.

Only mild weather has prevented a serious tieup in the local coal situation. A serious car shortage set in this week on practically all roads that in the past couple of weeks have been getting almost 100 per cent. supply. There seems to be no apparent reason for this, unless it be the failure of the railroads to handle equipment as they have done up to the present.

There seems to be an extraordinary delay in and around St. Louis in the movement of everything, although outside of the switching limits coal is moving unusually promptly.

In the Carterville field the bulk of the open market tonnage is going north, and but little to St. Louis. In addition to the car and the labor shortage many mines have been forced to suspend a portion of the time on account of no electricity, which is furnished by a company supplying several mines in the Williamson and Franklin County field.

In the Mt. Olive field practically the same condition exists, with no open market tonnage coming to St. Louis. It is estimated that not more than 15 per cent. of the normal Carterville tonnage is coming here, and that from the Mt. Olive field is not more than 50 per cent. of what it should be.

In the Standard field what with railroad and other contracts that take the coal out of the St. Louis market, considerably less than 50 per cent. comes here. There still continues to be labor troubles in this field, the miners going out over local petty grievances and in one or two instances quitting on account of the penalty clause. At several mines in the State of Missouri the miners have gone out altogether over the penalty clause.

One of the most aggravating cases locally is the confiscating of high-grade coal by railroads that have contracts for low-grade coal. The railroads contracting for Standard steam lump can make a 30-ton car of Carterville go as far as a 40-ton car of Standard, with practically the same price, and the tendency is to confiscate the high-grade coal.

There have been about 35 to 40 cars of anthracite moving in this week, which is an exceptionally good movement, but no smokeless and no Arkansas.

The new retail price effective Nov. 1 for anthracite, chestnut and stove is $10; egg and grate, $9.75; smokeless, $9.25; Carterville, $5.50; Mt. Olive, $5; Standard, $4.75; byproduct coke, $11.25; gashouse coke, $11, sidewalk delivery.

The new Government price per net ton f.o.b. mines is:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.65@2.80	$2.65@2.80	$2.65@2.80
3x6-in. egg	2.65@2.80	2.65@2.80	2.65@2.80
2x3-in. nut	2.65@2.80	2.65@2.80	2.65@2.80
No. 2 nut	2.65@2.80	.....	.....
No. 3 nut	2.65@2.80	.....	.....
No. 4 nut	2.65@2.80	.....	.....
No. 5 nut	2.15@2.30	.....	.....
2-in. scrgs	2.15@2.30	2.15@2.30	2.15@2.30
2-in. lump	.....	.....	2.65@2.80
3-in. lump	.....	2.65@2.80	.....
Steam egg	2.65@2.80	2.65@2.80	2.65@2.80
Mine run	2.40@2.55	2.40@2.55	2.40@2.55
Washed:			
No. 1	$2.65@2.80	$2.65@2.80	.....
No. 2	2.65@2.80	2.65@2.80	.....
No. 3	2.65@2.80	2.65@2.80	.....
No. 4	2.65@2.80	2.65@2.80	.....
No. 5	2.15@2.30	2.15@2.30	.....

Williamson and Franklin County rate is 87½c. Other fields, 72½c.

SEATTLE

Dealers think price too high at mine and retail margin too low. Delivery the big problem.

As has been pointed out heretofore the big problem in the Northwest is not price but supply and delivery. Everyone realizes now the mistake made by Dr. Garfield in advising consumers in this territory not to purchase coal shortly after the Government set the prices. The buyers held off in the hope that prices would be lowered still further with the result that the usual heavy-buying season went by with but few purchases being made. Now the dealers are flooded with orders that cannot under any circumstances be filled before the extreme cold weather sets in. There are not delivery facilities enough in the city to meet half the orders.

It is stated that the coal mines of the state are losing one or two days weekly because of lack of cars and the mines of the intermountain regions are producing only at 50 per cent. capacity. This leaves a fuel famine imminent unless speedy relief is obtained. To this end orders have been issued that all dealers must unload cars filled with fuel within 24 hours after they have been spotted by the railroads and failure to do this will result in the dealer losing his preference right for cars needed to keep up his fuel supply. At Seattle, Tacoma and Everett orders have been issued to grain consignees to unload cars at once so they can be turned back into the fuel hauling business.

Retailers are confused by the latest orders from Washington regarding coal prices for Seattle but express the opinion that coal prices will not be lower. The retailer gets 25c. a ton at the bunkers for his profit, also the handling charges made necessary by the teamster's union on the zone system for the city of from $1.25 to $2 per ton without "packing in." The bunker price will remain unchanged from that originally announced—$5.85.